# The ripple effect in family networks

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# 3

# Ambivalent Family Triads and Well-being

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In this chapter, we continue our investigation of triadic configurations. We analyse Family Network Method (FNM) data, collected in line with the Configurational Approach (CA) as explained in chapter 1. We retrieve embeddedness in ambivalent triads from family networks reported by mothers and investigate their association with mother's well-being.

## 3.1 INTRODUCTION

If relationships are characterized by positive aspects and also include conflict, these relationships are called ambivalent (e.g., Bengtson et al., 2002; Connidis, 2015; Girardin et al., 2018; Lüscher, 2002; Lüscher & Hoff, 2013; Lüscher & Pillemer, 1998; Pillemer & Suitor, 2002; Priester & Petty, 2001; Willson et al., 2006). Although many researchers working on family and interpersonal relationships have emphasized the importance of ambivalence, no research to date has attempted to propose a model that enables empirical testing of how ambivalence shapes higher-order network structures, such as triads. As triadic processes have been acknowledged as building blocks of family dynamics and interpersonal relationships, this limits the understanding of family configurations and personal networks. This chapter proposes a mathematical model addressing ambivalence in triads. It further tests the usefulness of the proposed model by applying it to family processes with well-being as an outcome.

The first part of this chapter is methodological and considers non-directed networks in which ties can be positive, negative, or ambivalent. For such networks, an ego-centered ambivalent triad census is proposed. Next, focussing on family networks, three processes are defined, balance, diffusion of stress, and divide and conquer, according to which we may understand how embeddedness in an ambivalent triad may affect the focal individual's (ego's) well-being. The second part of the chapter applies the ambivalent triad census to a sample of 300 mothers from the Swiss STEPOUT data (Widmer et al., 2012), 150 mothers in a first-time marriage and 150 divorced mothers, testing the three theoretical processes.

## 3.2 THE DERIVATION OF THE AMBIVALENT TRIAD CENSUS

This chapter considers non-directed networks in which ties can have three values: positive, negative, and ambivalent. This is an extension of a signed graph (Wasserman & Faust, 1994) in which the combination of positive and negative in the same tie can occur, and then is reported as 'ambivalent'. We are interested in data sets containing a large number of such networks with non-overlapping node sets, where in each network a special role is played by one actor, called the *focal actor*. For this type of valued network we first present the dyad census. The triad census could be defined as the frequencies of all subgraphs of three nodes, as a generalization of the triad census for binary networks (Holland & Leinhardt, 1976). The number of all non-isomorphic subgraphs here is large, however, which poses complications in dealing with a complete triad census. Therefore, we define a restricted version of the triad census. In this version the focal actor occupies a special role, and triads containing null ties are disregarded. We then explain how these triadic configurations may be related to individual-level outcomes of the focal actor, such as well-being. The proposed approach is meant to be relevant especially for data sets consisting of multiple small networks, as will be shown in the empirical application.

### 3.2.1 The ambivalent dyad census

We consider one non-directed valued network *X* where the tie values are negative (-), positive (+), and ambivalent (±), and where one of the actors in the network is the focal actor, denoted by *F*. The *dyad census* for such a structure is defined as the three-dimensional count



(1)

$$D = (D_-, D_+, D_\pm)$$

where

(2)

$$D_d = \sum_j I\left\{X_{Fj} = d\right\}$$

is, for $d$ = -, +, and ±, the number of ties of value *d* between actor *F* and any of the others. Here, *I*{*A*} is the indicator of the event *A*, equal to 1 if *A* is true, and 0 otherwise. This is analogous to the dyad census in binary networks (Wasserman & Faust, 1994), but restricted to actor *F*.

### 3.2.2 The ambivalent triad census

A similar procedure is used for the triad census. A *triad* is defined for a triple (*F*, *i*, *j*), composed of the focal actor "ego" and two other actors "alters", by the three tie values $X_{Fi}$, $X_{Fj}$, and $X_{ij}$. In first instance, this results in $3^4 = 81$ combinations. Retaining all these combinations would lead to a very complex approach. As a first exploration of the ambivalent triad census we decided to reduce complexity by leaving out the triples containing one or more null ties, this results in $3^3 = 27$ combinations. Further, some triads are isomorphic in the sense of being the same after permuting the two indices *i* and *j*. Since *F* has a special role, and the network is non-directed, this means that when the first two elements of the triad ($X_{Fi}$, $X_{Fj}$, $X_{ij}$) are permuted, the triad obtained will be isomorphic with the original triad. For example, the triads (- + ±) and (+ - ±) are isomorphic, but (- + ±) and (- ± +) are not. Accordingly, 18 isomorphism classes are defined, as listed in Figure 3.1. The *triad census* for a valued graph is the vector

(3)

$$T = (T_1, \ldots, T_{18})$$

containing the frequencies of each of the 18 isomorphism classes. Here, for $t = 1, \ldots, 18$, $T_t$ is the number of triads (*F*, *i*, *j*) isomorphic to triad *t* in Figure 3.1. We refer to (3) as the ambivalent triad census, in line with the generally known triad census for directed graphs developed by Harary, Norman, and Cartwright (1965) and Holland and Leinhardt (1976, 1977).

Triads 1-6 also occur in the traditional case of signed and undirected graphs (Cartwright & Harary, 1956), whereas triads 7-18 are the triads which contain one or more ambivalent dyads. The triad census has been generalized in various similar ways by other researchers. Isakov, Fowler, Airoldi, and Christakis (2019) considered the triad census for directed signed networks. The restriction to triads containing a given actor is similar to the definition for binary networks of triad-based roles given by Doran (2014). The ambivalent triad census which is proposed here differs from the triad census developed by Holland & Leinhardt (1976) in that 1) it has a fixed position for actor *F*, 2) it assumes undirected relationships, 3) tie values can be positive, negative, and ambivalent, and 4) only triads without any null ties are included (R script available in online supplementary material section 3.C).

Since the sizes of the networks in our study are relatively small, and the triad count is restricted to triads containing one given node, we did not consider advanced methods for calculating the triad census such as developed by Batagelj and Mrvar (2001) or Moody (1998), but used a direct double iteration with quadratic running time.

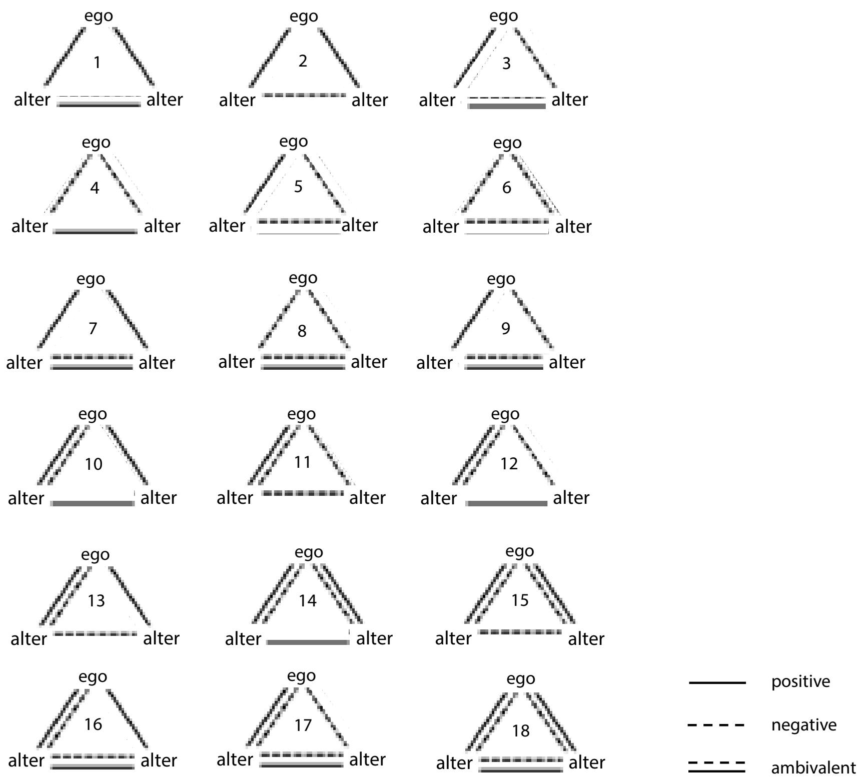


**Figure 3.1**: The 18 non-isomorphic triads with either positive, negative or ambivalent dyads

### 3.2.3 Ambivalent triad census and individual-level outcomes

The ambivalent triad census is used in this chapter to test the predictive power of three mechanisms. These mechanisms make it possible to make predictions about which triadic configurations are beneficial or detrimental to ego's well-being. More generally, one may consider theories about an individual-level variable that is expected to be influenced positively by some, and negatively by other triadic configurations. Applying such a theory about triads to predict individual-level variables requires a change of level from the triadic to the ego level (cf. Snijders, 2016).

The first step in this change of level was accomplished already by the actor-oriented nature of the ambivalent triad census, with the special role of the focal actor *F*. The 18 triad census proportions are, however, a large number of variables. We further reduce this high dimension to a more manageable number by using linear combinations corresponding to substantive theories. Holland and Leinhardt (1976) likewise proposed using linear combinations of their triad census for testing theoretical propositions.



Three mechanisms by which triadic processes may unfold in interpersonal relationships are proposed: an extended version of structural balance (Cartwright & Harary, 1956; Heider, 1946, 1958); diffusion of stress through relationships (Bowen, 1976); and divide and conquer (Coser, 1956). For each of these three mechanisms we explain which triads are considered to affect the focal actor and whether this effect will be positive or negative. Although the theories outlined below could be used also to propose expectations for all actors' well-being, in line with the focused approach of this chapter only predictions for ego's well-being are derived.

*Extended balance*. Extended balance is a direct generalisation of structural balance theory (Cartwright & Harary, 1956; Heider, 1946, 1958 this theory was also used in chapter 2), which stresses that triads are imbalanced if allies share a mutual enemy instead of a mutual ally and if enemies share a mutual enemy instead of becoming allies against this mutual enemy. Imbalance causes cognitive dissonance (Heider, 1958), which is expected to negatively affect well-being of the involved actors. According to structural balance, triads number 1, 4, and 5 in Figure 3.1 are considered to be balanced (Cartwright & Harary, 1956). We propose an extension of structural balance theory in order to account for triads with ambivalent dyads.

The mechanism of extended balance defines a balanced state based on the combination of positive and negative ties in a triad. It can be argued that the 'all-positive triad' is the most favourable state of balance, whereas some low level of conflict is tolerated in small groups with compulsory interactions, such as families or works teams, in which ambivalence is common. In triads without any ambivalent ties, the usual definition of balance applies, specifying balanced and unbalanced triads. In triads where all dyads are ambivalent or positive, the ambivalence will not endanger the balanced state, and these triads will count as balanced. If there is at least one negative dyad, however, the ambivalent dyad could turn positive or negative, and balance theory does not provide an unequivocal conclusion; therefore triads with at least one ambivalent and at least one negative dyad are neither balanced nor unbalanced. An overview of which of the 18 triads are considered to be balanced is given in Table 3.1 and is explained below.

*Diffusion of stress.* Ambivalent dyads within triads can also be considered in relation to the diffusion of stress within systems and groups (McCubbin & Patterson, 1983; Minuchin et al., 1975; Pearlin, 1999). The diffusion of stress within families was defined by the presence of so-called "triangles" (Bowen, 1976; Kerr, 2000). A family member in a negative dyad requires a third member as an ally in the fight to change the balance of power. The inclusion of a new person in the conflict, now involving three persons, in turn spreads the conflict into another dyad or subsystem. Dyads in small groups tend therefore to be chained by stress created by dyadic conflict in quasi-autonomous, highly emotional processes. The diffusion of stress across relationships has been underlined as a key detrimental factor for individual well-being in system-oriented research on families (Bowen, 1976; McCubbin & Patterson, 1983; Minuchin et al., 1975).

The state where diffusion of stress can be prevented is based on the existence of positive dyads that "block" the diffusion of stress caused by conflict across triads by encapsulating the stress within a single dyad. Starting point here hence is the 'all-negative triad' where ambivalent dyads are not sufficient to prevent stress from diffusing from one dyad to the next one in these triads. From this we argue that – if there are no purely positive ties in a triad – the diffusion of stress may expand in unchecked loops, potentially harming well-being. Accordingly, negative and ambivalent family dyads are detrimental to individuals' well-being when captured in a triadic structure involving at least one purely negative dyad, and in which there is not a single positive dyad. An overview of which of the 18 triads are considered to diffuse stress is given in Table 3.1 and is explained below.

*Divide and conquer.* A third mechanism conceptualizing ambivalence in triads is rooted in coalitions and power seeking in groups. This stems from the seminal work of Simmel (1904), as revisited by Coser (1956). It stresses the impetus for individuals to create conflict in relationships between their alters in order to achieve supremacy by dividing them, and may be called the "divide and conquer" or "tertius gaudens" strategy. This strategy shows some resemblance to Burt's (2004) approach of structural holes, where a person is supposed to be better off by keeping others at bay from each other in order to become an intermediary. Whereas the divide and conquer principle assumes that the tie between the two alters is characterised by mutual conflict, Burt's approach assumes that this alter-alter tie is non-existent. However, in both concepts individuals instrumentally modify the balance of power existing between alters (by way of their own relationships with the two alters).

More specifically, the principle of divide and conquer reflects that individuals develop cooperative relationships with two alters while promoting conflict or ambivalence between such two alters. Individuals can put both network members up against each other and accordingly gain prominence as intermediaries and facilitators. Next to purely conflict dyads, ambivalent dyads between the two alters are an opportunity for ego to divide and conquer. Again, some stress is expected to come out of this process, especially for the persons who are divided rather than dividing; if one of these persons is the focal actor, negative consequences for her well-being are expected. If the focal actor is dividing, positive outcomes for her well-being are expected.

The divide and conquer mechanism moreover requires nuancing in the context of the family. Depending on which family members are involved, ego will prefer triads without conflict above being in a powerful position of playing two family members against each other. For example, a mother's well-being is more likely to be negatively affected if she would play her two children against each other than to be positively affected from this powerful position. We argue that the state of divide and conquer in the context of the family may arise from a lack of alternatives. For example, in case family conflicts have become substantial and the shared family interest of improving family relationships is no longer an option, the 'positive' outcomes of a powerful position may become the preferred alternative: if ego is positively related to two conflicting or ambivalent alters, ego will gain in power, which positively affects her well-being. However, if it is one of the two alters who can play ego and the other alter against each other, ego's well-being will be negatively affected. It is expected that divide and conquer is rare, but that if it occurs, some individual benefits may be gained.

Table 3.1 shows an overview of the three mechanisms linking ambivalence in the 18 triads to well-being. The + and – in Table 3.1 refer to the expected effect on ego's well-being. Triads 7, 10, 14, 16 and 18 are defined to be balanced. The triads without ambivalent dyads, originating from structural balance theory, also distinguish imbalance (triads 2, 3 and 6) from balanced (triads 1, 4 and 5) triads. Balanced triads are expected to affect ego's well-being positively, whereas the imbalanced triads are expected to affect ego's well-being negatively. Triads 6, 8, 11, 15 and 17 are triads that diffuse stress and hence are expected to affect ego's well-being negatively. Triad 2 and 7 represent the divide and conquer scenario and will positively affect ego's well-being whereas triads 3 and 10 predicts a positive effect for the alters and therefore a negative effect for ego. It can be argued that triads 9, 12 and 17 also predict a negative outcome for ego's well-being. Because we want to limit the level of uncertainty in these predictions and making predictions for triads 9, 12, and 17 would add another level of speculation, we limit ourselves to the predictions for triads 2 and 7. Except for triads 9, 12 and 13, each triad is covered by at least one of the theories and has at least one expected effect on ego's well-being. Interestingly, triads 3, 6 and 7 result in similar predictions, whereas triads 2 and 10 result in opposite predictions. Since the three mechanisms will be translated into three linear combinations, with weights +1 for the positive entries, –1 for the negative entries, and 0 for the rest (calculations in R available upon request), both opposite predictions are included in the linear combination.

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**Table 3.1**: Ambivalent triad census outcomes for ego

| | Extended balance | Diffusion of stress | Divide & conquer |
|---|---|---|---|
| 1 | + | | |
| 2 | - | | + |
| 3 | - | | - |
| 4 | + | | |
| 5 | + | | |
| 6 | - | - | |
| 7 | + | | + |
| 8 | | - | |
| 9 | | | |
| 10 | + | | - |
| 11 | | - | |
| 12 | | | |
| 13 | | | |
| 14 | + | | |
| 15 | | - | |
| 16 | + | | |
| 17 | | - | |
| 18 | + | | |

### 3.2.4 Use of the ambivalent triad census for multiple networks

For applications to data sets with multiple networks, which may be of different sizes, the triad census can be made comparable by computing the proportional triad census, i.e. dividing the counts by the total number of triads in which none of the dyads is null.

(4) $$P_t = \frac{T_t}{\sum_{k=1}^{18} T_k}.$$

The ambivalent dyad census, i.e. the counts of positive, negative, ambivalent, and null dyads, should be considered as a complement to the ambivalent triad census. The dyad census represents the lower-order structure (Faust, 2007), and therefore is an important set of control variables. The dyads can be differentiated according to whether they include the focal actor; see Section 3.3.1. Similar to the ambivalent triad census, the ambivalent dyad census can be made proportional to the total number of dyads; also see Section 3.3.1.

## 3.3 APPLICATION TO FAMILY PROCESSES

Although family relationships positively contribute to important individual outcomes such as well-being (e.g., Gilligan et al., 2017; Thomas, Liu, Umberson, & Suitor, 2017) and health (e.g., Uchino, 1996, 2006; Umberson & Karas Montez, 2010), previous research reported that these beneficial individual outcomes of family relationships are not self-evident when family relationships are ambivalent. For instance, Fingerman, Pitzer, Lefkowitz, Birditt, and Mroczek (2008) reported a negative effect of self-reported ambivalence in the parent-adult child relationship on well-being and health; Kiecolt, Blieszner, and Savla (2011) reported negative effects of ambivalence towards the child on parents' depressive symptoms and happiness and Ucinino, Smith, and Berg (2014) reported negative effects of spousal ambivalence on medical outcomes such as coronary artery calcification.



Whereas personal relationships such as friendships are of a voluntary character, family relationships have a more "inescapable" character because they cannot easily be terminated. At the same time – or perhaps consequently – ambivalence is considered to be more "natural" in family relationships compared to other personal relationships (Gilligan et al., 2015), but may also cause stress (Fingerman et al., 2008). Previous research focusing on ambivalent family relationships mainly studied dyads while disregarding the larger sets of relationships in which such dyads are embedded (Girardin et al., 2018). Studied from a dyadic perspective, one might expect that family members wish to avoid ambivalent relationships in which the amount of conflict outweighs the positive valence of that relationship (Offer & Fischer, 2018). Studied from a triadic or broader network perspective, one understands the constraints of the family on keeping such relationships active. Taking these larger interdependencies among a variety of alter family members into account enables us to better understand how ambivalent family relationships affect individual outcomes such as well-being.

The STEPOUT research was designed to uncover relational patterns, including support and conflict relationships, in stepfamilies in comparison with first-time families using social network methods (FNM) (Widmer et al., 2012 see explanation FNM in CA in chapter 1). Recall that the FNM asks ego, which in the STEPOUT data is mother, about her significant family members (alters). The respondents belong to a non-proportional representative random sample of 300 women drawn from the population of females living in the canton of Geneva, Switzerland, with at least one child of their own aged 5 to 13 years, referred to as the target child, and living with a partner, cohabiting or married. Respondents were located using a random procedure based on a list of all households comprising children in the canton of Geneva, a mostly urban area of Switzerland, and were interviewed between the spring of 2009 and the winter of 2010. They were first recruited through a survey institute and, if they agreed to an interview, they were then contacted by the research team. No incentive was paid, but the importance of doing academic research on stepfamilies was stressed.

The response rate was 65%. In one half of the cases (150 women in stepfamilies), the target child was the child of the respondent, but not of her co-residential partner. The respondent or her partner might have had other children, either together or with another partner, living at home or elsewhere. In the other half of the cases (150 women in first-time families), the target child was the child of both the respondent and her co-residential partner. The respondent or her partner had no other children from previous relationships. The two halves of the sample were matched with regard to the age and the sex of the target child, and the educational level of the respondent, to allow for a comparison of stepfamilies and first-time families with similar characteristics (see Widmer et al., 2012 for more information). Face-to-face interviews with a duration of about one hour and a half were conducted by the research team. Interviews were done in various settings depending on the respondents' preferences, mostly in their home or at the university. Absence of other family members during the interview was required in order to ensure confidentiality. A detailed informed consent form was signed by each participant identifying the rights of the participants and the rights of use of the data by the research team.

### 3.3.1 Operationalization

*Self-esteem.* The well-being measurement available in the STEPOUT data is an adjusted version of the state self-esteem scale (Heatherton & Polivy, 1991). Self-esteem represents the positive or negative evaluation someone has about his/her functioning, covering several domains. The original self-esteem scale developed by Heatherton and Polivy (1991) consisted of 20 items, measuring social, performance and appearance self-esteem. As described in Widmer et al. (2012), STEPOUT collected only 11 items, 6 items measuring social and 5 items performance. Social aspects of self-esteem focus on social interactions, e.g., "I am worried about how others think of me", whereas performance aspects of self-esteem focus on how someone evaluates his/her performance, e.g., "I am sure I understand things". A description is given in Appendix 3.A.

*Ambivalent family dyads.* The valued graphs were constructed by using two dimensions of dyadic variables, one expressing the positive valence of a relationship, the other the negative valence. This information was obtained from the reports of ego on the ego-alter tie and the alter-alter tie. The positive valence of a relationship was measured with the question: "Who would give X emotional support during minor problems (for example when X is sad, has had a difficult day, who can help, comfort X)?". The negative valence of a relationship was measured with the question: "Every family has its conflicts and tensions. In your opinion, who makes X often angry (who annoys X, who makes X mad)?".

As illustrated in Table 3.2, dyads, i.e., reports by ego about the ego-alter and alter-alter dyad, that are characterised only by support (not requiring reciprocation) and hence no conflict are considered to be a positive relationship. Dyads that are only characterised by conflict (not requiring reciprocation) and hence no support are considered to be a negative relationship. Dyads that are characterised by support as well as conflict (again not requiring reciprocation) are considered to be ambivalent.

**Table 3.2:** Ambivalent dyad definition

| Report about tie 1 | Report about tie 2 | Result |
|---|---|---|
| | | Null tie |
| Positive | | Positive |
| Positive | Positive | Positive |
| Positive | Negative | Ambivalent |
| Negative | | Negative |
| Negative | Positive | Ambivalent |
| Negative | Negative | Negative |
| Positive + negative | | Ambivalent |
| Positive + negative | Positive | Ambivalent |
| Positive + negative | Negative | Ambivalent |
| Positive + negative | Positive + negative | Ambivalent |



The dyad census is differentiated according to whether the dyads are ego-alter (mother with other family members) or alter-alter (between other family members, not involving mother) pairs. The ego-alter proportion for dyad value *d* is defined as

(5) $$\text{EAProp}(d) = \frac{1}{n-1} \sum_i I\{X_{Fi} = d\}$$

where *d* can be -, +, or ±. Here *n* is the network size (including ego). Similarly, the alter-alter proportion for dyad value *d* is

(6) $$\text{AAProp}(d) = \frac{1}{(n-1)(n-2)} \sum_{i,\, j \neq F} I\{X_{ij} = d\}$$

Calculations are programmed in R and are available upon request.

*Ambivalent family triads and the three mechanisms.* The three linear combinations for the theoretical mechanisms were calculated using the proportions of (4) with weights +1 and –1 according to Table 3.1 (calculations in R script are available upon request).

*Control variables.* As network control variables we used the number of family members, i.e., network size, as well as the proportion of triads without any null dyads in the network, i.e. 'triad presence'. The total number of triples in the non-directed network, for a given fixed focal actor, is (*n*1)(*n*2)/2. In line with (3) and (4), 'triad presence' therefore is defined as (7)

(7) $$P_{\text{non-null}} = \frac{2\sum_k T_k}{(n-1)\,(n-2)}.$$

Since the data consists of 150 first-time families and 150 stepfamilies we distinguish between being a stepfamily (0 = no, 1 = yes). Because previous research (Castrén & Widmer, 2015) showed that it matters for first-time families whether the couple is officially married or has another partnership we controlled for marriage (0 = married, 1 = cohabiting). Finally, we also controlled for education (0 = mother has a university degree, 1 = mother does not have a university degree).

### 3.3.2 Descriptives

*Self-esteem.* Table 3.3 shows that social self-esteem on average is slightly higher than performance self-esteem. Additional explorations (Appendix 3.B) show that mothers from stepfamilies score higher on social self-esteem. Table 3.4 shows that performance and social self-esteem are positively correlated.

*Ambivalent family dyads.* Table 3.3 presents the proportions of positive, negative, ambivalent and null ego-alter and alter-alter ties. The proportion of negative ego-alter (5%) and negative alter-alter (7%) ties is relatively low, compared to the proportion of positive and ambivalent ego-alter and alter-alter ties.

Table 3.4 shows that mother's performance self-esteem is positively correlated with the proportion of positive ego-alter, and negatively correlated with the proportion of ambivalent ego-alter and alter-alter ties. Mother's social self-esteem is positively correlated with the proportion of positive alter-alter ties. The positive correlation between negative ego-alter ties and stepfamily implies that stepmothers report higher proportions of negative ties between herself and her family members (see Appendix 3.B).

*Ambivalent family triads.* Table 3.3 shows that some of the 18 triads are rare, especially triads involving negative ties. Those involving positive and ambivalent ties are more frequent. For some triad types the standard deviations are much larger than the mean, which for these non-negative variables indicates a highly skewed distribution. In an explorative fashion, the triad frequencies were compared between the first time families and stepfamilies, using the multivariate Hotelling's t-squared test (Curran, 2013). Because of the non-normal distribution the permutational null distribution was considered. No significant difference was found ($p$ = 0.28).

*The three mechanisms.* Table 3.3 also shows the means and standard deviations for the three statistics belonging to the mechanisms: extended balance, diffusion of stress, and divide and conquer. Recall that diffusion of stress is expressed by the frequency of triads supposed to be conducive to diffusion of stress, but with a minus sign, so that higher values of this variable point to less diffusion of stress. The positive correlations in table 3.4 show that the frequency of triads that diffuse stress is associated to lower social as well as performance self-esteem and that balanced triads are associated to higher social self-esteem. Besides high correlations with dyadic proportions, we also see moderate correlations between the measurements of the three mechanisms balance, diffusion of stress, and divide and conquer. A principal component analysis (results available upon request) on balance, diffusion of stress, and divide and conquer was conducted which showed that balance and diffusion of stress have high loadings on the same component. Balance and diffusion of stress were therefore combined in one variable, defined by adding the two standardized variables, to ensure that both variables contribute evenly to the combined scale. Divide and conquer, also standardized for the analyses, remained a separate variable.

**Table 3.3**: Dyadic and triadic descriptives (*N* = 300)

| | Mean | S.D. | Min. | Max. |
|---|---|---|---|---|
| *Self-Esteem* | | | | |
| Social | 3.727 | 0.643 | 1.670 | 5.000 |
| Performance | 3.506 | 0.455 | 2.200 | 5.000 |
| *Ambivalent family dyads* | | | | |
| Proportion null ego-alter | 0.117 | 0.162 | 0.000 | 0.800 |
| Proportion positive ego-alter | 0.472 | 0.258 | 0.000 | 1.000 |
| Proportion negative ego-alter | 0.046 | 0.088 | 0.000 | 0.778 |
| Proportion ambivalent ego-alter | 0.365 | 0.267 | 0.000 | 1.000 |
| Proportion null alter-alter | 0.478 | 0.234 | 0.000 | 1.000 |
| Proportion positive alter-alter | 0.269 | 0.193 | 0.000 | 1.000 |
| Proportion negative alter-alter | 0.070 | 0.096 | 0.000 | 0.667 |
| Proportion ambivalent alter-alter | 0.183 | 0.173 | 0.000 | 1.000 |
| *Ambivalent family triads* | | | | |
| Triad 1 | 0.220 | 0.269 | 0.000 | 1.000 |
| Triad 2 | 0.030 | 0.085 | 0.000 | 0.500 |
| Triad 3 | 0.016 | 0.054 | 0.000 | 0.500 |
| Triad 4 | 0.002 | 0.011 | 0.000 | 0.125 |
| Triad 5 | 0.014 | 0.051 | 0.000 | 0.455 |
| Triad 6 | 0.002 | 0.016 | 0.000 | 0.182 |
| Triad 7 | 0.056 | 0.097 | 0.000 | 0.500 |
| Triad 8 | 0.002 | 0.020 | 0.000 | 0.314 |
| Triad 9 | 0.011 | 0.036 | 0.000 | 0.250 |
| Triad 10 | 0.192 | 0.194 | 0.000 | 1.000 |
| Triad 11 | 0.012 | 0.046 | 0.000 | 0.429 |
| Triad 12 | 0.010 | 0.035 | 0.000 | 0.231 |
| Triad 13 | 0.037 | 0.080 | 0.000 | 0.667 |
| Triad 14 | 0.063 | 0.117 | 0.000 | 0.750 |
| Triad 15 | 0.048 | 0.100 | 0.000 | 1.000 |
| Triad 16 | 0.109 | 0.150 | 0.000 | 1.000 |
| Triad 17 | 0.018 | 0.062 | 0.000 | 0.500 |
| Triad 18 | 0.148 | 0.216 | 0.000 | 1.000 |
| *Three mechanisms* | | | | |
| Balance (BAL) | 0.757 | 0.275 | -0.600 | 1.000 |
| (Prevent) Diffusion of Stress (DOS) | -0.082 | 0.147 | -1.000 | 0.000 |
| Divide and Conquer (DAC) | -0.122 | 0.249 | -1.000 | 1.000 |
| BAL + DOS* | 0.000 | 1.713 | -9.000 | 1.442 |
| DAC* | 0.000 | 1.000 | -3.530 | 4.509 |
| *Network control variables* | | | | |
| Network size | 10.760 | 4.461 | 3.000 | 30.000 |
| Total Triads | 19.550 | 20.966 | 0.000 | 180.000 |
| Triad Presence | 0.466 | 0.268 | 0.000 | 1.000 |
| *Other control variables* | | | | |
| Married | 0.637 | | 0.000 | 1.000 |
| Highly educated | 0.547 | | 0.000 | 1.000 |

** Centered and standardized*

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**Table 3.4**: Spearman's rank correlations

| | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|
| 1. SE-S | | | | | | |
| 2. SE-P | .373*** | | | | | |
| 3. BAL | .126* | .019 | | | | |
| 4. DOS | .177** | .136* | .487*** | | | |
| 5. BAL + DOS | .149** | .062 | .958*** | .691*** | | |
| 6. DAC | -.061 | -.038 | -.286*** | -.0020 | -.246*** | |
| 7. Prop Pos EA | .054 | .156** | .092 | .488*** | .239*** | .129* |
| 8. Prop Neg EA | -.087 | .0012 | -.511*** | -.371*** | -.500*** | .010 |
| 9. Prop Amb EA | -.055 | -.146* | .156** | -.408*** | .015 | -.245*** |
| 10. Prop Pos AA | .113* | .074 | .285*** | .306*** | .338*** | -.379*** |
| 11. Prop Neg AA | -.035 | .021 | -.718*** | -.543*** | -.740*** | .235*** |
| 12. Prop Amb AA | -.104 | -.117* | .131* | -.248*** | .017 | .105 |
| 13. Triad presence | .029 | .048 | .183** | -.045 | .136* | -.077 |
| 14. Network size | -.155** | -.061 | .023 | -.055 | .041 | -.141* |
| 15. Stepfamily | .111 | .100 | -.168** | -.032 | -.142* | .0051 |
| 16. Highly educ. | .017 | .144* | .0045 | .017 | .011 | .092 |
| 17. Married | -.059 | -.087 | .139* | -.022 | .099 | .0035 |

** $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

**Table 3.4**. Spearman's rank correlations (continued)

| | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. |
|---|---|---|---|---|---|---|---|---|---|---|
| 7. Prop Pos EA | | | | | | | | | | |
| 8. Prop Neg EA | -.199*** | | | | | | | | | |
| 9. Prop Amb EA | -.706*** | -.162** | | | | | | | | |
| 10. Prop Pos AA | .356*** | -.062 | -.204*** | | | | | | | |
| 11. Prop Neg AA | -.071 | .238*** | .025 | -.198*** | | | | | | |
| 12. Prop Amb AA | -.446*** | -.060 | .691*** | -.201*** | .058 | | | | | |
| 13. Triad presence | .042 | -.123* | .413*** | .443*** | .121* | .539*** | | | | |
| 14. Network size | .071 | .169** | -.290*** | -.036 | -.100 | -.337*** | -.437*** | | | |
| 15. Stepfamily | -.018 | .171** | -.056 | -.071 | .086 | -.080 | -.067 | .087 | | |
| 16. Highly educ. | -.0025 | .023 | -.080 | .0058 | -.055 | -.026 | -.011 | .048 | -.080 | |
| 17. Married | -.083 | -.149** | .121 | .033 | -.122* | .107 | .077 | -.108 | -.617*** | .050 |

** $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

### 3.3.3 Plan of analysis

Our research question focuses on triadic effects, but it is important to control for the dyadic effects, as these provide a simpler and lower-order competing explanation. Therefore, we investigate whether the linear combinations of the triad census have an effect on social and performance self-esteem while controlling for the dyadic effects and the mentioned control variables. Since two of the three linear combinations operationalizing the theoretical concepts are highly correlated, as mentioned in the preceding section, we use only two: the combined measurement of balance and diffusion of stress (named BAL+DOS in tables) and divide and conquer (DAC). Given the limited sample size and the rather large number of rather highly correlated variables (see Table 3.4), we wanted to restrict the number of tests and also prevent variables hiding each other's significance. In order to avoid capitalization on chance, we decided to perform the analyses with a forward selection procedure, as follows. In robustness checks (section 3.D of the online supplementary material), we re-analysed our models with a backward procedure, leading to similar results.



For both dependent variables, social and performance self-esteem, a series of OLS regression analyses were conducted. The first model only includes the individual control variables: stepfamily, education, and marriage; regardless of their significance, they are included in all further models. In the following steps, only the significant variables (at the 0.05 significance level) are retained. Second, the network control variables, network size and proportion of 'empty' triads, are added to the model. Third, all of the three dyadic alter-alter proportions are added, followed by the dyadic ego-alter proportions. Fifth, the two triadic linear combinations are added to the models. In case we find any triadic effects, the non-significant (if any) dyadic variables are added again to the final model as a robustness check.

Additionally, in an explorative fashion (section 3.E of the online supplementary material), we test in the fifth model for differences between the first-time and the stepfamilies by calculating interaction effects for stepfamily and the aggregated triadic effects.

## 3.4 RESULTS

### 3.4.1 Social self-esteem

Table 3.5 reports the results for social self-esteem. The final model shows a positive significant effect, for the balance and diffusion of stress combination ($b = 0.115$, S.E. = 0.038, $p < 0.01$ two-sided), which shows that mothers who are embedded in a family with many balanced triads and few diffusion-of-stress triads score higher on social self-esteem. The standardized coefficient is $b$S.D.(BAL+DOS)/S.D.(Social) = 0.3, a small-moderate effect size. We do not find an effect for the divide and conquer mechanism. None of the dyadic effects are significant. Further testing (section 3.E of the online supplementary material) shows that the positive effect of balanced triads and triads preventing the diffusion on social self-esteem does not differ between mothers of first-time families and mothers in step families.

The control variables show that larger networks are associated with lower social self-esteem (*b* = -0.033, S.E. = 0.010). Furthermore, mothers in stepfamilies score higher on social self-esteem (*b* = 0.223, S.E.= 0.094). Further testing (section 3.E of the online supplementary material) again shows that the negative effect of larger networks on social self-esteem does not differ significantly between mothers of first-time families and mothers in stepfamilies. The explained variance is small (adjusted $R^2$ = 0.05, Table 3.5).

### 3.4.2 Performance self-esteem

Table 3.6 shows the results for performance self-esteem. The last three models show an effect (*b* = 0.286, SE = 0.150) for the proportion of positive alter-alter ties. This suggests that mothers who are embedded in a network with higher proportions of positive alter-alter ties tend to have higher performance self-esteem (regardless of their own relationships with these alters). The standardized coefficient is 0.1, a small effect size. There are no significant triadic effects for performance self-esteem. The control variables plausibly show that highly educated women score higher on performance self-esteem (*b* = 0.139, SE = 0.053). Similar to social self-esteem, the explained variance in these models is small (adjusted $R^2$ = 0.03, Table 3.6).

**Table 3.5**: OLS regression analyses of mother's self-esteem (social): Unstandardized coefficients

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. |
| Intercept | 3.623 | (0.114)*** | 3.902 | (0.181)*** | 3.940 | (0.197)*** | 3.990 | (0.287)*** | 3.865 | (0.143)*** | 4.088 | (0.289)*** |
| BAL + DOS | | | | | | | | | 0.056 | (0.023)* | 0.115 | (0.038)** |
| DAC | | | | | | | | | -0.022 | (0.038) | -0.029 | (0.045) |
| PropPosEA | | | | | | | 0.022 | (0.253) | | | -0.139 | (0.274) |
| PropNegEA | | | | | | | -0.372 | (0.490) | | | 0.552 | (0.588) |
| PropAmbEA | | | | | | | -0.260 | (0.251) | | | -0.249 | (0.308) |
| PropPosAA | | | | | 0.123 | (0.205) | | | | | -0.190 | (0.237) |
| PropNegAA | | | | | -0.216 | (0.417) | | | | | 0.813 | (0.509) |
| PropAmbAA | | | | | -0.307 | (0.240) | | | | | -0.337 | (0.347) |
| Triad Presence | | | -0.058 | (0.152) | | | | | | | | |
| Network Size | | | -0.0233 | (0.0092)* | -0.027 | (0.010)** | -0.0263 | (0.0089)** | -0.0254 | (0.0084)** | -0.033 | (0.010)*** |
| Stepfamily *( 1= yes)* | 0.159 | (0.094) † | 0.166 | (0.094) † | 0.184 | (0.094) † | 0.185 | (0.094) † | 0.202 | (0.094)* | 0.223 | (0.094)* |
| Highly educated *(1 = yes)* | 0.033 | (0.075) | 0.051 | (0.074) | 0.051 | (0.074) | 0.046 | (0.074) | 0.070 | (0.074) | 0.092 | (0.075) |
| Married *(1 = yes)* | 0.010 | (0.098) | -0.012 | (0.097) | -0.002 | (0.098) | 0.006 | (0.098) | -0.007 | (0.096) | 0.026 | (0.097) |
| N | 300 | | 300 | | 300 | | 300 | | 300 | | 300 | |
| Adjusted R2 | 0.0044 | | 0.021 | | 0.024 | | 0.027 | | 0.043 | | 0.050 | |

Note: Standard errors in parentheses † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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**Table 3.6**: OLS regression analyses of mother's self-esteem (performance): Unstandardized coefficients

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. |
| Intercept | 3.405 | (0.080)$^{***}$ | 3.457 | (0.128)$^{***}$ | 3.290 | (0.097)$^{***}$ | 3.282 | (0.168)$^{***}$ | 3.320 | (0.089)$^{***}$ |
| BAL + DOS | | | | | | | | | 0.004 | (0.017) |
| DAC | | | | | | | | | -0.010 | (0.028) |
| PropPosEA | | | | | | | 0.165 | (0.182) | | |
| PropNegEA | | | | | | | -0.100 | (0.342) | | |
| PropAmbEA | | | | | | | -0.078 | (0.166) | | |
| PropPosAA | | | | | 0.336 | (0.141)$^{*}$ | 0.209 | (0.145) | 0.286 | (0.150)$^{†}$ |
| PropNegAA | | | | | 0.369 | (0.276) | | | | |
| PropAmbAA | | | | | -0.066 | (0.155) | | | | |
| Triad Presence | | | 0.097 | (0.107) | | | | | | |
| Network Size | | | -0.0087 | (0.0065) | | | | | | |
| Stepfamily *( 1= yes)* | 0.080 | (0.066) | 0.084 | (0.066) | 0.093 | (0.066) | 0.104 | (0.066) | 0.095 | (0.067) |
| Highly educated *(1 = yes)* | 0.140 | (0.052)$^{**}$ | 0.146 | (0.052)$^{**}$ | 0.138 | (0.052)$^{**}$ | 0.134 | (0.052)$^{*}$ | 0.139 | (0.053)$^{**}$ |
| Married *(1 = yes)* | -0.026 | (0.069) | -0.038 | (0.069) | -0.017 | (0.069) | -0.003 | (0.069) | -0.023 | (0.068) |
| N | 300 | | 300 | | 300 | | 300 | | 300 | |
| Adjusted R2 | 0.022 | | 0.030 | | 0.037 | | 0.043 | | 0.032 | |

Note: Standard errors in parentheses $^{†}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

## 3.5 CONCLUSION AND DISCUSSION

This chapter introduced an ego-centered ambivalent triad census for non-directed valued networks: the frequencies of 18 non-isomorphic triads in which dyads can be positive, negative or ambivalent. To predict how individual well-being may depend on embeddedness in family triads, three mechanisms were tested: balance, diffusion of stress, and divide and conquer. These were operationalized by linear combinations of the ambivalent triad census, as calculated for the focal person in the network. This operationalization echoes a procedure proposed by Holland and Leinhardt (1976), but applied to a focal actor in a valued network, in a data structure of multiple independent networks between different persons, which may be called a multilevel network structure. The empirical application to 300 family networks, in which mothers were the focal actors, shows that those who are embedded in triads that exhibit balance and little diffusion of stress score higher on social self-esteem. These results were controlled for the ambivalent dyad census, showing that in spite of the finding by Faust (2007) that much variation in the triad census (in the regular case of directed graphs) is explained by the dyad census, the ego-centered ambivalent triad census contains relevant variability that is not included in the corresponding dyad census. Thus, our results illustrate the importance of the network level beyond the dyads for the effects of families on individual well-being.



Bengtson et al. (2002, p. 574) urged that future ambivalence research should further develop valid and reliable measurements of ambivalence and that it should demonstrate the theoretical and empirical usefulness of ambivalence, especially when it enables explaining the link with family outcomes. Our research contributes to this issue by considering ambivalence in triadic configurations. As proposed by Girardin et al. (2018), considering the network level beyond the dyads is a significant step towards the understanding of the interdependencies that play a role in keeping conflict family relationships active, even though they may involve conflict. This empirical result is also in line with previous network research on triadic structures and individual outcomes. For instance, Ellwardt, Wittek, Hawkley, and Cacioppo (2019) found that balance, operationalized in terms of positive and negative ties, is linked to stress in personal networks of elderly individuals. Widmer, Girardin, and Ludwig (2018) found that conflict structures in family networks, operationalized as conflict density and betweenness centrality of respondents in conflict, are associated with psychological health problems in old age.

Concerning methodological issues, it should be noted that self-esteem is only a proxy for well-being, which may partly explain the low explained variance; it would be interesting to also study other dependent variables; other data would be needed for this purpose. Second, in order to prevent a proliferation of variables and data snooping, we compressed the variables in several steps: by using proportions, then by using linear combinations, then by adding two highly correlated predictors. This means that we cannot confidently make conclusions about more fine-grained distinctions, e.g., whether one negative tie already damages well-being, nor about the contributions of individual elements of the triad census, nor make a distinction between balance and non-diffusion of stress. Answering such questions will require larger multi-level family network data collection, such as proposed in chapter 1 and presented in chapter 5. Third, we did not distinguish alter family roles. An interesting next step would be to see if some triads occur more often with specific family roles. Fourth, in robustness checks (section 3.F of the online supplementary material) we controlled for triads 9, 12, and 13, since these triads were not covered in the three triadic mechanisms: balance, diffusion of stress and divide and conquer. Triads 9 and 12 negatively affected social self-esteem. Although these analyses did not lead to different conclusions for our main research questions, these results suggest that there may be degrees of freedom in the ambivalent triad count not covered by our three mechanisms that nevertheless are important for the focal actor. This could be illuminated in further research. In addition, we re-analysed our models with a backward procedure, also leading to similar results.

An interesting next question is whether the ambivalent triad census is applicable to groups beyond families. In our view, in order to apply the ambivalent triad census to other domains, the underlying theoretical mechanisms affecting individual well-being should be adjusted to the new context. The mathematical model is general, but if necessary it could be adjusted, e.g., by also considering triads containing null ties. The ambivalent triad census may be applicable to work relationships: work conflicts may arise but the work relationship will continue, resulting in ambivalent work relationships.

## 3.A APPENDIX: SELF-ESTEEM

The five items representing performance self-esteem are: a) I trust my abilities, b) I am disappointed by my performances (reversed), c) I think that I'm smarter than others, d) I am sure I understand things, e) I feel like I'm not doing anything right (reversed). The six items representing social self-esteem are: f) I am concerned about whether I am considered a winner or a loser (reversed), g) I am uncomfortable with others (reversed), h) I'm worried about what others think about me (reversed), i) I feel inferior to others (reversed), j) I care if I look stupid (reversed), k) I'm worried about being taken for an idiot (reversed). The answer categories are: never (1), rarely (2), sometimes (3), often (4), very often (5).

## 3.B APPENDIX: DESCRIPTIVE STATISTICS DIVORCED/NON-DIVORCED

**Table 3.7**: Dyadic and triadic descriptives (divorced and non-divorced separately)

| | Divorced ($N = 150$) | | | | Non-Divorced ($N = 150$) | | | | Welch's two sample t-test |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Min. | Max. | Mean | S.D. | Min. | Max. | t |
| *Self-Esteem* | | | | | | | | | |
| Social | 3.802 | 0.660 | 2.000 | 5.000 | 3.652 | 0.618 | 1.667 | 5.000 | -2.031* |
| Performance | 3.548 | 0.462 | 2.400 | 4.800 | 3.463 | 0.446 | 2.200 | 5.000 | -1.608 |
| *Ambivalent family dyads* | | | | | | | | | |
| Proportion no ego-alter | 0.120 | 0.158 | 0.000 | 0.800 | 0.114 | 0.166 | 0.000 | 0.667 | -0.307 |
| Proportion positive ego-alter | 0.467 | 0.255 | 0.000 | 1.000 | 0.478 | 0.262 | 0.000 | 1.000 | 0.369 |
| Proportion negative ego-alter | 0.057 | 0.088 | 0.000 | 0.500 | 0.035 | 0.088 | 0.000 | 0.778 | -2.155* |
| Proportion ambivalent ego-alter | 0.357 | 0.277 | 0.000 | 1.000 | 0.373 | 0.257 | 0.000 | 1.000 | 0.537 |
| Proportion no alter-alter | 0.493 | 0.239 | 0.000 | 1.000 | 0.464 | 0.229 | 0.000 | 0.861 | -1.090 |
| Proportion positive alter-alter | 0.250 | 0.173 | 0.000 | 0.727 | 0.288 | 0.211 | 0.000 | 1.000 | 1.716 |
| Proportion negative alter-alter | 0.076 | 0.095 | 0.000 | 0.429 | 0.064 | 0.096 | 0.000 | 0.667 | -1.166 |
| Proportion ambivalent alter-alter | 0.181 | 0.195 | 0.000 | 1.000 | 0.185 | 0.150 | 0.000 | 0.700 | 0.206 |
| *Ambivalent family triads* | | | | | | | | | |
| Triad 1 | 0.222 | 0.260 | 0.000 | 1.000 | 0.219 | 0.279 | 0.000 | 1.000 | -0.083 |
| Triad 2 | 0.036 | 0.089 | 0.000 | 0.500 | 0.024 | 0.081 | 0.000 | 0.500 | -1.254 |
| Triad 3 | 0.023 | 0.069 | 0.000 | 0.500 | 0.009 | 0.032 | 0.000 | 0.180 | -2.382* |
| Triad 4 | 0.002 | 0.012 | 0.000 | 0.125 | 0.002 | 0.010 | 0.000 | 0.077 | 0.0049 |
| Triad 5 | 0.021 | 0.060 | 0.000 | 0.455 | 0.008 | 0.038 | 0.000 | 0.286 | -2.207* |
| Triad 6 | 0.002 | 0.018 | 0.000 | 0.182 | 0.002 | 0.015 | 0.000 | 0.143 | -0.360 |
| Triad 7 | 0.048 | 0.084 | 0.000 | 0.500 | 0.065 | 0.109 | 0.000 | 0.500 | 1.547 |
| Triad 8 | 0.002 | 0.012 | 0.000 | 0.091 | 0.002 | 0.026 | 0.000 | 0.314 | 0.167 |
| Triad 9 | 0.014 | 0.044 | 0.000 | 0.250 | 0.007 | 0.025 | 0.000 | 0.143 | -1.787 |
| Triad 10 | 0.178 | 0.185 | 0.000 | 1.000 | 0.206 | 0.202 | 0.000 | 0.784 | 1.274 |

**Table 3.7**: Dyadic and triadic descriptives (divorced and non-divorced separately) (continued)

| | Divorced (*N* = 150) | | | | Non-Divorced (*N* = 150) | | | | Welch's two sample t-test |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Min. | Max. | Mean | S.D. | Min. | Max. | t |
| Triad 11 | 0.016 | 0.049 | 0.000 | 0.250 | 0.009 | 0.043 | 0.000 | 0.429 | -1.469 |
| Triad 12 | 0.012 | 0.035 | 0.000 | 0.182 | 0.008 | 0.036 | 0.000 | 0.231 | -0.800 |
| Triad 13 | 0.036 | 0.068 | 0.000 | 0.333 | 0.039 | 0.091 | 0.000 | 0.667 | 0.293 |
| Triad 14 | 0.060 | 0.103 | 0.000 | 0.636 | 0.066 | 0.130 | 0.000 | 0.750 | 0.422 |
| Triad 15 | 0.049 | 0.112 | 0.000 | 1.000 | 0.046 | 0.088 | 0.000 | 0.375 | -0.193 |
| Triad 16 | 0.101 | 0.126 | 0.000 | 0.667 | 0.118 | 0.171 | 0.000 | 1.000 | 0.963 |
| Triad 17 | 0.022 | 0.065 | 0.000 | 0.500 | 0.014 | 0.059 | 0.000 | 0.500 | -1.093 |
| Triad 18 | 0.138 | 0.212 | 0.000 | 1.000 | 0.158 | 0.220 | 0.000 | 1.000 | 0.818 |
| *Three mechanisms* | | | | | | | | | |
| Balance (BAL) | 0.706 | 0.306 | -0.600 | 1.000 | 0.807 | 0.230 | -0.029 | 1.000 | 3.230$^{**}$ |
| Diffusion of Stress (DOS) | -0.091 | 0.162 | -1.000 | 0.000 | -0.073 | 0.131 | -0.857 | 0.000 | 1.068 |
| Divide and Conquer (DAC) | -0.118 | 0.234 | -1.000 | 1.000 | -0.127 | 0.264 | -0.784 | 1.000 | -0.303 |
| BAL + DOS* | -0.245 | 1.874 | -9.000 | 1.442 | 0.245 | 1.501 | -8.131 | 1.442 | 2.502$^{*}$ |
| DAC* | 0.018 | 0.938 | -3.530 | 4.509 | -0.018 | 1.061 | -2.658 | 4.509 | -0.303 |
| *Network control variables* | | | | | | | | | |
| Network size | 11.207 | 4.765 | 3.000 | 30.000 | 10.313 | 4.103 | 4.000 | 26.000 | -1.740 |
| Total Triads | 21.293 | 23.215 | 0.000 | 180.000 | 17.807 | 18.360 | 2.000 | 146.000 | -1.443 |
| Triad Presence | 0.449 | 0.268 | 0.000 | 1.000 | 0.481 | 0.267 | 0.039 | 1.000 | 1.059 |
| *Other control variables* | | | | | | | | | |
| Married (0 = *no*) | 0.340 | | 0.000 | 1.000 | 0.933 | | 0.000 | 1.000 | 13.528$^{***}$ |
| Highly educated (0 = *no*) | 0.507 | | 0.000 | 1.000 | 0.587 | | 0.000 | 1.000 | 1.392 |

*Means testing based on the Welch Two Sample t-test* $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$
** Centered and standardized*

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