Blood Is Thicker Than Water: Kinship Orientation Across Adulthood

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The importance of kin relationships was investigated across adulthood with 5 samples (total $N = 1{,}365$). Within the personal networks, the genetic relatedness with relationship partners predicted subjective closeness (mean $r = .50$) and social support (mean $r = .13$). Effects were robust in 2 samples when controlling for residential proximity and contact frequency. These intraindividual correlations showed considerable variability and were interpreted as individual expressions of nepotism. The heritability of individual nepotism was zero. Variability of nepotism was unrelated to personality traits, but substantially related to sex, and parental and partner status. The authors discuss subjective closeness as 1 proximate cue to kinship, and suggest nepotistic adaptations as powerful mechanisms in social relationships.

A world where everyone feels close to and supports everyone else without differentiating in accordance with some sort of guiding rule is hard to imagine. Lay psychology knows one such rule that states that blood is thicker than water, implying that kin are generally favored over non-kin. Personality and social psychology, in contrast, have largely ignored kin relationships beyond the nuclear family. One reason for this has to do with the alleged recent societal changes and the demise of extended kinship systems (Berscheid, 1996; Buss, 1999a; Kenrick & Trost, 1997). Still, the importance of kin relationships appears invariant across the diverse cultures of the human species, and does not seem to vary profoundly across the mammal and many other animal species (e.g., Alcock, 1993).

In this article, we conceptualize *nepotism* as a powerful mechanism for shaping subjective closeness in social relationships. We hypothesize that within personal networks the subjective closeness with various partners is highly associated with different levels of genetic relatedness, even when controlling for residential proximity and frequency of contact with each relationship partner. On the basis of the assumption that in the environment of evolutionary adaptedness nepotistic adaptations have successfully competed with less discriminate (or even indiscriminate) social behaviors, we specifically examine two questions. First, we study the general role of nepotism in the regulation of subjective closeness and compare this with the regulation of social support. Second, we investigate whether and how individual differences in orientation toward kin exist and how these are related to individual personality traits, to differential heritability, to biological sex, and to other features of the social context.

Kin Selection and Inclusive Fitness

Ever since Hamilton (1964) identified kin selection as a key mechanism for achieving inclusive fitness, kinship has grown into a major concept of evolutionary theory. Hamilton's basic idea was that the overall influence of an individual on the perpetuation of his or her genes in subsequent generations (i.e., the inclusive fitness) is an additive function of the individual's own fitness plus the effects of his or her actions on the reproductive success of genetic relatives, degraded by the degree of genetic relatedness. With this extension of Darwin's theory, Hamilton outlined one condition under which altruism may have evolved.

Genetic relatedness should not be confused with genetic similarity. Whereas genetic similarity refers to the overlap of alleles

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shared by individuals of a species, or between species (e.g., between mice and men), genetic relatedness refers to genealogical linkages in a sexually reproducing diploid species. The coefficient of relatedness (coefficient *r*) reflects the probability that one particular autosomal allele in one individual will be shared by another individual, because both directly descend from the same allele in a common ancestor. Thus coefficient *r* ranges between 1 (for monozygotic [MZ] twin), .5 (for parent, child, full sibling, dizygotic [DZ] twin), .25 (for half-sibling, grandparent, grandchild, avuncular relationship), .125 (for cousins, great-grandchildren, great-grandparents, great-aunts, great-uncles), .0625 (for other kin), and 0 (for unrelated persons such as marital partner, brother- or sister-in-law, adopted or step sibling, friend, acquaintance, etc.).

In what ways does this pertain to social relationships? Among a set of basic propositions about universal aspects of kinship, Daly, Salmon, and Wilson (1997) argued that kin and non-kin relationships are universally arrayed on a dimension of closeness, which correlates strongly with genetic relatedness. Obviously, this does not require that humans are aware of copies of their genes in other people. It seems instead more likely that humans apply a simple heuristic that guides them toward kin emotionally, because the subjectively felt closeness may represent, among other things, one proximate cue to genetic relatedness. Modern evolutionary theory uses the term *nepotism* for this trait, even though it originally referred to the priority treatment of the bastard sons by Roman Popes and other high Vatican officials. In this sense, Alexander (1979) characterized humans as "exceedingly effective nepotists, and we should have *evolved* to be nothing else at all" (p. 46).

Kinship Psychology

Although the most meaningful social events take place within families and kin groups, there exist—to the best of our knowledge—no systematic reviews or meta-analytic studies on kin relationships. To illustrate the importance of kin relationships, and coefficient *r*, we selectively review three exemplary research lines: (a) the study of differential altruism in everyday versus life threatening (i.e., life-or-death) situations; (b) the study of kin versus non-kin relationships over different stages of the human life course; and (c) the comparative study of specific kin relations such as different types of sibling relationship.

Decision rules on altruism in everyday versus life-or-death situations have been explored by Burnstein, Crandall, and Kitayama (1994), who found in a series of experiments that people give much more weight to differential kinship and the reproductive value of relatives in imagined life threatening situations as compared with everyday situations. The other side of such an altruistic heuristic, however, also implies that essential help could be refused to unrelated individuals. These experimental results on altruism in hypothetical situations are generally consistent with historical observations on the importance of kinship in realistic situations with conditions of famine or other disasters, such as in the *Plymouth Colony* (McCullough & Barton, 1991) or at the *Donner Party Disaster* (Grayson, 1993).

Fortunately, most social interactions do not occur under life threatening conditions but instead in everyday life. Research on personal relationships over the life course has consistently shown that kin relations, if available, remain relatively important as stable sources for emotional and instrumental support until late in life (e.g., Essock-Vitale & McGuire, 1985; Ikkink & van Tilburg, 1998, 1999; Lang, 2000; Salmon & Daly, 1996). It has also been shown that non-kin relationships such as with friends or colleagues are mostly determined by balanced "reciprocal cooperation," whereas kin relationships are primarily characterized by "communal sharing" (e.g., Clark, 1984; Trivers, 1971). In this vein, Ikkink and van Tilburg (1999) found for older adults that unbalanced relationships with close kin were more likely to be continued than unbalanced non-kin relationships.

The role of genetic relatedness within a single category of relationship can also nicely be illustrated for different kinds of sibling relationship with varying degrees of coefficient *r*. In fact, White and Riedmann (1992) observed that step- and half-sibling relationships in adulthood were less intense than full-sibling relationships, although step and half siblings were acknowledged as kin and the relationship patterns appeared quite similar. In a study of Mormon polygamous families, solidarity and closeness between full siblings was much stronger than between half siblings, although the official culture prescribed an ethos that strove to downplay genetic differences while overemphasizing the role of paternal descent (Jankowiak & Diderich, 2000). Moreover, the quality of twin relationships strongly depends on zygosity status: Emotional and residential closeness, contact, and support have been shown to be, over the adult life course, much stronger in MZ than in DZ twin pairs (Neyer, 2002).

Nepotistic Tendencies as Evolved Psychological Adaptations

From an evolutionary perspective, nepotistic tendencies may be considered in terms of evolved psychological adaptations that are inherited by human nature. Adult humans act as adaptation executors or as mechanism activators, who have acquired evolved psychological mechanisms that direct their social interactions according to basic heuristics that have been adaptive in the evolutionary past (Tooby & Cosmides, 1992). Because the individual is considered as the highest hierarchical level of functionally integrated, complex adaptations, Daly and Wilson (1998) argued that nepotistic adaptations characterize the individual social psyche rather than being just emergent properties of societies, families, or other collectivities. Therefore, nepotistic tendencies of the individual person should precipitate in the subjective closeness experienced with his or her social partners, and subjective closeness should be strongly associated with the genetic relatedness of partners. Because the adult human life history consists of stages with different reproductive and postreproductive opportunities (i.e., mating, parental and grandparental efforts), humans are likely to have evolved a variety of more relationship-specific nepotistic mechanisms depending on their age-related tasks. However, it is unlikely that people change their nepotistic orientations profoundly when growing older, and we expected to find comparable levels of nepotism across young, middle-aged and older adults. At the same time, we expected a high variability in the individual expression of nepotism all over adulthood.

The Individual Expression of Nepotism

Although Hamilton's (1964) rule predicts that humans will prefer kin when all other things are equal, it is nevertheless

possible that human individuals may vary in how much they keep track of kin. This is because humans face different social opportunities depending on social network composition, sex-related life strategies, and perhaps on individual differences in basic personality traits. The fact that a psychological adaptation has evolutionary significance does not necessarily mean that (a) it is immune against environmental conditions, (b) that it must have a high heritability, or (c) that it must appear equal in all humans (Alexander, 1979; Crawford & Anderson, 1989). On the contrary, it is likely that psychological adaptations show substantial "phenotypic" variability, for the most part because of psychologically contingent environmental rather than genetic reasons. We studied three sources of variation in nepotism: genetic variation and individual differences in personality traits, biological sex differences, and diverging social opportunities.

We included a twin design to study whether variation in nepotism was due to differential heritability. Behavior genetic research has consistently revealed that individual differences in stable personality traits have a substantial genetic contribution, explaining as much as half of the phenotypic variance (Plomin & Caspi, 1999). Nevertheless, natural selection tends to reduce differential heritability, which is why traits with the most direct effects on inclusive fitness, such as nepotism, are generally the ones with the lowest heritability. From an evolutionary perspective, the crucial test for the hypothesis of an individual psychological adaptation is usually the evidence that the source of phenotypic behavioral variation is environmental rather than genetic (Crawford & Anderson, 1989; Daly et al., 1997; Falconer, 1960). Therefore, we expected low, or even zero, heritability in individual nepotism. In line with this hypothesis, we expected only small correlations between nepotism and heritable basic personality traits such as the Big Five. Although personality traits, in general, play an important role in forming and maintaining social relationships (see Neyer, in press; Neyer & Asendorpf, 2001), we conceived nepotism for the most part as immune against individual differences in personality traits.

It is widely acknowledged by evolutionary theorists that sexual dimorphism provides the best, and possibly the only, example of genetic life-history differences in humans: Men and women face quite different reproductive opportunities resulting in different sexual and (grand-) parental investment strategies (Buss, 1999a; Buss & Schmitt, 1993). Although somewhat oversimplified, women are usually more likely to achieve reproductive success by either investing in kin or receiving investment from kin, whereas men may increase their reproductive success by kin investment strategies, in addition to whatever short-term mating strategies they have. We therefore expected women to show stronger nepotistic inclinations as compared with men, and empirical studies have already supported this claim (e.g., Essock-Vitale & McGuire, 1985; Euler & Weitzel, 1996; Salmon & Daly, 1996).

We also studied parental and partner status as social conditions of variation in nepotism. Because parenthood implies the most profound kind of nepotistic investment, we expected that adults with children would reveal higher levels of nepotism than childless adults, although nepotism of childless adults should still be substantial because of its evolutionary significance. We also expected differences between participants with ongoing partner relationships and participants who were single. Partner relationships are attachment relationships, which is why partners should receive the highest ratings in closeness and support. In consequence, we hypothesized that partner-attached individuals would appear less nepotistic than singles, who might compensate the absence of partner by investment in kin.

Overview of the Study

The current research combined five samples from three large studies. Three samples consisted of older adults (> 65 years), one sample of middle-aged adults (45–65 years), and one sample of younger adults (20–40 years). Although the studies were designed for different research purposes, they were consistent in the use of a personal network approach, and allowed the replication of findings. One major advantage of the personal network approach is its simultaneous view of a broad range of social relationships from the perspective of the individual (Milardo, 1992; Neyer, 1997). Thus, it is ideally suited for the study of nepotism, because the *hierarchical rank order of relationships* within personal networks can be directly compared.

We pursued two analytic strategies. First, we studied nepotism on the basis of 16,943 relationships, and examined how subjective closeness and received support in general vary with coefficient *r*. Second, we studied at the level of the individual person (on the basis of 1,365 participants of the studies) to what extent an individual experiences subjective closeness and receives support due to genetic relatedness. We expressed the individual expression of nepotistic tendencies by the intraindividual correlation between the levels of coefficient *r* and the converging levels of received support or subjective closeness with various members of his or her personal network. Because closeness and support are typically associated with the residential proximity and the contact frequency with social partners (Antonucci & Akiyama, 1987; Aron, Aron, & Smollan, 1992; Berscheid, Snyder, & Omoto, 1989), we aimed to control the intraindividual correlations for these variables in two samples.

Method

Participants

The participants of this research ($N = 1{,}365$) belonged to five samples from three different studies. The first sample, labeled "Old Age 1," included 128 male and 258 female twins (i.e., 133 MZ and 60 same-sex DZ twin pairs) aged 64 to 89 years, who participated in the Genetic Oriented Life Span Study on Differential Development (Neyer, 2002; Weinert, 1997). Mean age was 71.5 years ($SD = 4.7$).

The second sample, from the Berlin Aging Study and labeled "Old Age 2," consisted of community-dwelling and institutionalized West Berlin residents aged 70 to 104 years (Baltes & Mayer, 1999). Mean age was 84.7 ($SD = 8.6$). A total of 499 participants (247 women and 252 men) are considered in the following analyses. Seventeen participants who did not report network partners in the relationship questionnaire were excluded.

The remaining three samples, labeled "Old Age 3," "Middle Age," and "Young Adult," included the 480 participants of the Successful Aging and Life Experience project (see Lang & Carstensen, 2002). Participants were recruited through probability sampling from the local registration office in Berlin, Germany, stratified by year of age cohort and sex. Each sample included 80 men and 80 women: The Old Age 3 sample was aged 70 to 90 years ($M = 80.7$, $SD = 5.8$), the Middle Age sample was aged 45 to 65 years ($M = 55.6$, $SD = 5.8$), and the Young Adult sample was aged between 20 and 40 years ($M = 30.7$, $SD = 5.7$).

Table 1
Network Size and Composition

Coefficient *r*	Type of relationship	Study 1 Old Age 1 *M*	Study 1 Old Age 1 *SD*	Study 2 Old Age 2 *M*	Study 2 Old Age 2 *SD*	Old Age 3 *M*	Old Age 3 *SD*	Study 3 Middle Age *M*	Study 3 Middle Age *SD*	Young Adult *M*	Young Adult *SD*
$r = .5$	Co-twin[a]	0.97	0.17	—	—	—	—	—	—	—	—
	Sibling	1.13_a	1.46	0.45_b	0.76	0.34_b	0.72	0.87	1.00	1.19_a	1.18
	Child	2.18	1.53	1.15_a	1.25	1.31_a	1.20	1.38_a	1.02	0.75	1.00
	Parent	0.06	0.25	—	—	0.00	0.00	0.49	0.67	1.56	0.73
$r = .25$	Grandchild	2.19	2.76	1.02_a	1.57	0.92_a	1.50	0.47	0.86	0.00	0.00
	Niece–nephew	1.09	2.03	—	—	0.36_a	0.74	0.48_a	1.18	0.20	0.58
	Aunt–uncle	—	—	—	—	0.03	0.16	0.19	0.89	0.41	0.86
	Grandparent	—	—	—	—	0.00_a	0.00	0.00_a	0.00	0.31	0.55
$r = .125$	Cousin	0.34_a	0.91	—	—	0.13_b	0.44	0.22_{ab}	0.56	0.24_{ab}	0.67
	Extended kin[b]	—	—	—	—	0.12	0.65	0.01_a	0.08	0.03_a	0.19
$r = .0625$	Other kin[c]	0.59_a	1.35	2.43	3.22	0.41_{ab}	1.17	0.36_b	1.08	0.27_b	0.64
$r = 0$	Partner	0.65_a	0.49	0.38_b	0.49	0.43_b	0.50	0.73_a	0.43	0.62_a	0.54
	Children-in-law	1.06	1.26	0.52_a	0.80	0.48_{ab}	0.73	0.33_b	0.65	0.00	0.00
	Sibling-in-law	1.23	1.61	—	—	0.28	0.74	0.64_a	1.13	0.52_a	1.09
	Parent-in-law	0.03	0.18	—	—	0.00	0.00	0.19	0.49	0.53	0.86
	Friend	3.25_a	3.65	1.90_b	3.00	1.63_b	2.38	3.70_a	4.51	4.81	3.94
	Acquaintance	0.76_a	1.54	1.72_b	2.45	1.16_c	2.08	1.46_{bc}	2.24	1.07_{ac}	2.58
	Neighbor	0.62_a	1.42	0.49_a	1.08	0.35_b	1.02	0.29_b	0.89	0.03	0.16
	Colleague	0.55_a	1.55	—	—	0.42_a	1.40	1.10_b	1.94	0.74_b	1.57
	Professional helper	—	—	0.17_a	0.59	0.10_a	0.38	0.03_b	0.21	0.01_b	0.07
	Total network size	16.70	7.40	10.08	7.02	8.52	6.86	13.05_a	7.74	13.43_a	6.27

Note. The means refer to the average numbers of persons in a specific relationship category. Not all relationship types were coded in all samples; dashes indicate relationships that were not coded. Means sharing the same subscripts in a given row do not differ significantly from each other ($ts < 1$, $ps > .05$). [a] In monozygote co-twins, coefficient *r* is 1. [b] Extended kin in Study 3 included relationships like great-grandchildren, great-grandparents, great-aunts, and great-uncles. [c] Other kin could include blood kin (with coefficient $r > .125$) or in-laws (with $r = 0$).

Measures

Social network interview. Subjective closeness with relationship partners and received support were assessed by a social network interview. Participants were interviewed using a modified semiprojective technique that had been originally developed by Antonucci (1976). The measure is comparable with the Subjective Closeness Scale used by Berscheid et al. (1989), or the Inclusion of Other in the Self scale developed by Aron et al. (1992). Although the general procedure was comparable across the three studies, the studies differed in interview technique and the specification of kinds of relationship: Whereas the Old Age 1 sample was explicitly asked for specific kinds of relationship using a recognition technique, participants of the other samples were interviewed using a free recall procedure. The most important kinds of relationship (i.e., relationship with partner, child, child-in-law, sibling, grandchild, friend, acquaintance, neighbor) were consistently coded in each study, but the studies differed in the use of more specific kinds of relationship (e.g., co-twin, uncle, aunt, nephew, niece, cousin, in-law, colleague, professional helper; see Table 1).

Participants were presented a diagram of three concentric circles and explained that they should imagine themselves in the center being surrounded by people with whom they felt "very close, so close that it would be hard to imagine a life without" (inner circle), "close, but not quite so close compared to those named in the inner circle" (middle circle), or "less close, but who are still important" (outer circle). Participants were then asked to name these persons and to place them according to their subjective closeness into one of the three circles. This placement of persons was the operational definition of *subjective closeness*, varying between *not very close* (1), *quite close* (2), and *very close* (3). After this network generating procedure, participants were asked for persons' sex, age, and membership of a specific relationship category. In sum, 16,943 relationships were assessed (i.e., Old Age 1: $n = 6{,}379$; Old Age 2: $n = 5{,}022$; Old Age 3: $n = 1{,}356$; Middle Age: $n = 2{,}037$; Young Adult: $n = 2{,}149$).

Residential proximity and *frequency of contact* with each network member were also assessed in the Old Age 1 and Old Age 2 samples. Participants of the Old Age 1 sample rated frequency of contact on a 7-point-scale (1 = *never*, 3 = *several times a year*, 5 = *once a week*, 7 = *every day*), and indicated residential proximity on a 6-point-scale (6 = *same house/same household*, 5 = *in the neighborhood*, 4 = *less than 15 minutes away*, 3 = *more than 15 minutes away*, 2 = *more than one hour away*, 1 = *far away*). Participants in the Old Age 2 sample rated contact on a 9-point-scale (1 = *never*, 3 = *once a year*, 5 = *once a month*, 7 = *once a week*, 9 = *every day*). Proximity was rated on a 6-point-scale (6 = *same house/same household*, 5 = *West Berlin*, 4 = *East Berlin*, 3 = *West Germany*, 2 = *East Germany*, 1 = *Abroad*).[1]

Received support was differently operationalized in each study. Participants of the Old Age 1 sample were asked with respect to each named person, (a) how often he or she entrusted the other with personal concerns, (b) how often he or she was encouraged by the other, for example, in case of feeling sad, (c) how often he or she received social support from the other, for example, in case of illness, (d) how often he or she received instrumental support from the person. The frequency of each support item

[1] To adjust contact frequency across both studies, we recoded scores into an estimated number of days in contact per year (i.e., every day = 325 days, once a week = 52 days, etc.). The proximity scales were too different, and thus not adjusted (i.e., proximity of Berliners in the Old

was rated on 5-point scales (1 = *never*, 5 = *very often*). The mean of the four items was used as a composite of support a participant had received from a network member ($M = 2.84$, $SD = 1.09$, $n = 6{,}379$, Cronbach's $\alpha = .87$).

In the Old Age 2 sample, support received from others was assessed with five items. Participants reported those persons who during the past 3 months gave any of four types of support: (a) help with household chores, (b) help with shopping or other errands, (c) confiding about personal matters, (d) cheering up. In addition, participants named those persons who would be potential care givers. All five dichotomous items of different types of support were summed for each relationship (ranging from 0 to 5) resulting in a mean of 0.31 ($SD = 0.78$; $n = 5{,}022$) instances of support received from each person (Cronbach's $\alpha = .65$).

In the Old Age 3, Middle Age, and Young Adult samples, support was assessed in a similar procedure with four items. Participants reported those persons who during the past 3 months gave any of the three types of support: (a) advice or confiding about personal matters, (b) appreciation and esteem support, and (c) tenderness or affection to the participant. A fourth item asked whether the network member has received affection from the participant. All four dichotomous items of different types of support received were summed for each social relationship resulting in a mean of 0.72 ($SD = 1.11$, $n = 5{,}542$, range = 0–4) instances of support received from each network member (Cronbach's $\alpha = .72$).

Personality. The Big Five personality traits of the Old Age 1 sample were assessed using the German version of the NEO Five Factor Inventory (NEO-FFI; Borkenau & Ostendorf, 1993). With the exception of Openness ($\alpha = .58$), internal consistencies were acceptable for Neuroticism ($\alpha = .78$), Extraversion ($\alpha = .74$), Agreeableness ($\alpha = .67$), and Conscientiousness ($\alpha = .81$). As expected, MZ twin pairs were more similar than DZ pairs in Extraversion (intraclass correlation [ICC] = .53 vs. .06), Neuroticism (.47 vs. .26), Conscientiousness (.64 vs. .39), Agreeableness (.47 vs. .26), and Openness (.50 vs. .27). Calculations of heritability yielded a mean heritability index of $h^2 = .46$. As the mean estimate of heritability is consistent with findings from other studies of older twins (e.g., Pedersen et al., 1991), the twin sample was considered as unbiased for genetic differences.[2]

Neuroticism, Extraversion, and Openness of the Old Age 2 sample were assessed with a shortened, adapted 18-item version of the NEO-FFI (Lang, Staudinger, & Carstensen, 1998). With the exception of Openness ($\alpha = .56$), internal consistencies were acceptable for Neuroticism ($\alpha = .75$), and Extraversion ($\alpha = .64$). Conscientiousness and Agreeableness were not assessed.

The five personality constructs of the remaining three samples were assessed using the German version of the Big Five Inventory (Lang, Lüdtke, & Asendorpf, 2001). Internal consistencies were acceptable for Extraversion ($\alpha = .82$), Agreeableness ($\alpha = .67$), Conscientiousness ($\alpha = .75$), Neuroticism ($\alpha = .77$), and Openness ($\alpha = .78$).

Results

Network Size and Composition

Network size and composition are shown for each sample in Table 1. Each kind of relationship was characterized by a specific degree of coefficient *r*, varying between 0 and 1. Different kinds of relationships were not consistently specified in each study. For example, "extended kin" and "other kin" were defined as distinct categories in the Old Age 3, Middle Age, and Young Adult samples: Relationships with great-grandchildren, great-grandparents, great-uncles, and great-aunts were explicitly assigned to the category of extended kin (coefficient $r = .125$), whereas the category of "other kin", which was also specified by the other studies, could include both unspecified blood kin (with a hypothetical coefficient $r > .125$) and in-laws (with coefficient $r = 0$). Therefore, persons of this relationship category had a probability of .0625 to be kin, and were characterized by coefficient $r = .0625$.

The overall sizes of the personal networks differed between the samples because of variation in sample characteristics, and because of variations in interview technique. For example, because the Old Age 1 sample was interviewed using a recognition technique, participants reported larger networks as compared with participants of the other samples. However, the variances of the overall network sizes were comparable between the five samples.

The five samples also differed markedly in the mean numbers of network persons named in each relationship category. Kinds of relationship with coefficient $r = .5$ (50%-related kin) included relationships with co-twin (with $r = 1.0$ in the case of an MZ co-twin), siblings, parents, and children. The different numbers of these relationships were due to differences in generation between the five samples.

Coefficient $r = .25$ (25%-related kin) was assigned to relationships with nieces, nephews, aunts, uncles, grandchildren, and grandparents. Again, relationships with 25%-related kin reflected differences in generation: As compared with older adults, who did not report grandparents and only very few aunts and uncles, younger adults reported relationships with aunts, uncles, and grandparents more often. In contrast, the middle-aged and older adults mentioned grandchildren, nieces, and nephews more frequently.

Kinds of relationship with coefficient $r = .125$ (12.5%-related kin) included those with cousins or extended kin (defined as great-grandparental and great-avuncular relationships in the Old Age 3, Middle Age, and Young Adult samples). These relationships were not explicitly coded in the Old Age 2 sample, and were therefore likely to have been reported in the category of "other kin." The category of "other kin" was characterized by coefficient $r = .0625$ (6.25%-related kin), as it could include both unspecified kin (with a supposed coefficient $r > .125$) and in-laws (with $r = 0$). Because avuncular relationships and extended kin were not explicitly assessed in the Old Age 2 sample, participants reported the largest number of other kin as compared with participants of the other samples.

All other kinds of relationships were coded as non-kin relationships (coefficient $r = 0$) and included unrelated kin (i.e., partner and in-laws) and relationships with friends, neighbors, acquaintances, colleagues, and professional helpers. In sum, differences in network size and composition reflected the heterogeneity of age, cohort, and gender across the five samples.

Age 2 sample was assessed before the Berlin wall came down: West Berlin and West Germany were considered as closer than East Berlin and East Germany).

[2] The correlational difference between MZ and DZ twins can be used to estimate the heritability h^2 of a trait, that is, $h^2 = 2\ (r_{MZ} - r_{DZ})$. Heritability was .92 for Extraversion, .40 for Neuroticism, .48 for Conscientiousness, .08 for Agreeableness, and .44 for Openness. The average subjective closeness and the average received support were both undue to heritability, as reflected by comparable MZ and DZ correlations (i.e., .14 vs. .18, and .21 vs. .29).

General Patterns of Nepotism

The general link of genetic relatedness with subjective closeness and received support was examined across all relationships assessed in the five samples (n = 16,943). Measures of subjective closeness and received support were *z*–transformed within each sample, and then compared between six groups of kin and non-kin relationships (Figure 1). Three large groups of kin relationship (n = 7,491; 44.2%) were distinguished: Because MZ co-twins are an exceptional kind of kin and rarely reported in our study, MZ twin relationships with r = 1 (n = 253; 1.5%) and relationships with r = .5 (n = 3,529; 20.8%) were included in the first group of at least 50%-related kin (i.e., $r \geq .5$; n = 3,782; 22.3%). The second group included 25%-related kin (n = 2,170; 12.8%). The third group consisted of 12.5%- and 6.25%-related kin. These relationships were combined in a group of less close kin (i.e., $r \leq .125$; n = 1,539; 9.1%), because differences between the more distant kin relationships appear smaller than differences between closer relatives (see Burnstein et al., 1994). Analogously, three groups of non-kin relationships (with r = 0; n = 9,452; 55.8%) were distinguished because of the supposed importance of relationship partners such as romantic or marital partners (n = 705; 4.2%), friends (n = 2,723; 16.1%), and other non-kin such as colleagues, acquaintances, neighbors, in-laws, and so on (n = 6,024; 35.6%).

As expected, subjective closeness with kin was much stronger than with non-kin, $t(16{,}941) = 56.33$, $p < .001$, Cohen's d = .86, whereas received support from kin was greater than support from non-kin to a much lesser extent, $t(16{,}941) = 4.68$, $p < .001$, d = .07. The six groups of kin and non-kin relationships also differed regarding mean levels of subjective closeness, $F(5, 16{,}943) = 1{,}062.48$, $p < .001$, and received support, $F(5, 16{,}943) = 632.20$, $p < .001$. Post hoc comparisons (using Bonferroni's test) revealed that each group was unique in subjective closeness (ps < .001, ds ranging from .16 to 1.66). Received support differed also between the six groups (ps < .01, ds ranging from .10 to 2.01), with the exception of support from 25%-related kin and less-related kin

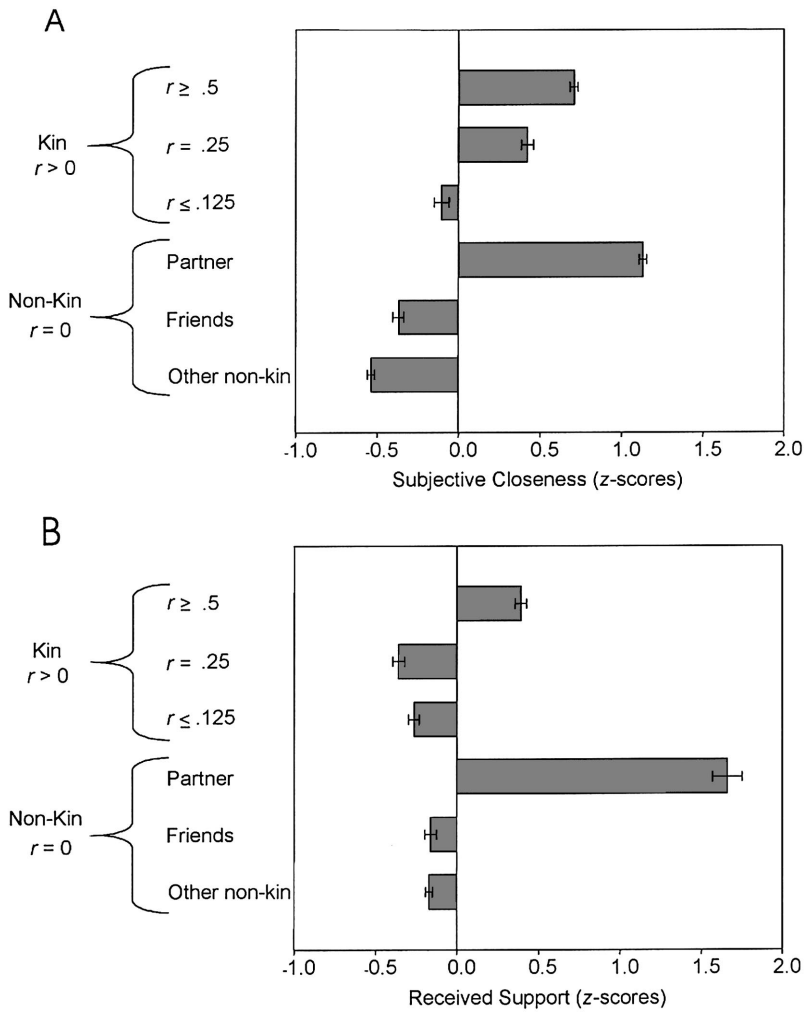

Figure 1. Mean subjective closeness (A) and received support (B) vary between and within kin and non-kin relationships (n = 16,943 relationships, 95% standard error).

($d = .09$), and the received support from friends and other non-kin ($d = .01$).

The results indicate, first, that kin relationships dominated over non-kin relationships in subjective closeness and, to a lesser extent, in received support. Second, a clear rank-order of subjective closeness emerged: Partners received highest levels of closeness, followed by 50%-related kin, 25%-related kin, 12.5%-and-less-related kin, friends, and other non-kin. In contrast, no clear rank order emerged for received support: Support was highest for partners, followed by 50%-related kin, whereas the support from 25%-related kin and less-related kin was comparable, and even smaller than from other kinds of non-kin relationship.

Individual Expressions of Nepotism

The general perspective on nepotism, however, conceals that participants differed very much in how their personal network was composed (see Table 1). To account for these differences in social opportunity structure we also studied how subjective closeness and received support varied as a function of genetic relatedness *within* personal networks. The individual expression of nepotism was operationalized by intraindividual Spearman rank correlations of the differential levels of coefficient *r* with differential levels in subjective closeness and received support, respectively. These individual correlations were transformed using Fisher's *r*-to-*Z*-transformation, and aggregated across participants of each sample.[3]

We additionally calculated intraindividual partial correlations in the Old Age 1 and Old Age 2 samples, controlling for the residential proximity and contact frequency with each network member. It appeared indeed that across both samples the genetic relatedness with partners was negatively correlated with proximity (mean intraindividual $r = -.24$, $SD = .38$) and uncorrelated with contact (mean $r = -.03$, $SD = .42$). Proximity was uncorrelated with subjective closeness (mean $r = -.03$, $SD = .45$) and positively correlated with received support (mean $r = .29$, $SD = .34$). Contact was positively correlated with both closeness (mean $r = .32$, $SD = .44$) and support (mean $r = .53$, $SD = .29$). These results indicate that older adults lived closer to non-kin than to kin, but did not contact non-kin more or less often than kin. In contrast, subjective closeness was unrelated to proximity, but moderately related to contact, whereas support was more strongly associated with both variables.

The descriptive statistics of the raw and controlled nepotism measures, and the effect sizes (Cohen's *d*) for differences due to biological sex, partner, and parental status are shown in Table 2. The mean raw correlation of subjective closeness and coefficient *r* was .50, and ranged from .42 to .56 across the five samples, $F(4, 1365) = 4.36$, $p < .01$. The mean partial correlation between closeness and coefficient *r* controlling for proximity and contact was .47 and differed significantly between the Old Age 1 and Old Age 2 samples, $F(1, 885) = 11.54$, $p < .001$. Although still substantial, the partial correlations were significantly smaller than the raw correlations in the Old Age 1 sample, $t(385) = 6.37$, $p < .001$, $d = .32$, and in the Old Age 2 sample, $t(498) = 2.56$, $p < .01$, $d = .12$.

The mean raw correlation between received support and coefficient *r* was .13 and ranged from .05 to .24 across the samples, $F(4, 1365) = 6.29$, $p < .001$. The mean partial correlation between support and coefficient *r* controlling for proximity and contact was .21 and differed significantly between the Old Age 1 and Old Age 2 samples, $F(1, 885) = 30.21$, $p < .001$. Whereas the partial and raw correlations were comparable in the Old Age 2 sample, $t(498) = 1.53$, $d = .07$, the partial correlation in the Old Age 1 sample was significantly larger than the raw correlation, $t(498) = 6.20$, $p < .01$, $d = .32$, indicating that proximity and contact may have suppressed the individual relation between degree of kinship and support.

Variation in the individual expression of nepotism was studied regarding age, biological sex, partner and parental status, basic personality traits, and heritability. It should be acknowledged that these effects can be interpreted as moderators of the intraindividual correlations of genetic relatedness with closeness and support, respectively.

Age. Tests for age differences were based on contrasts between the Young Adult, Middle Age, and Old Age 3 samples belonging to the same study. The three samples showed comparable levels in both measures of nepotism, Fs$(2, 480) < 1.80$, *ns*.

Sex. Whereas the sex difference was small in the Young Adult sample, medium effect sizes were observed in the other samples, indicating that women were generally more nepotistic than men. The mean effect sizes were $d = .29$ for raw nepotism scores, and $d = .37$ for controlled scores. The interaction of sex with age (based on the Young Adult, Middle Age, and Old Age 3 samples) was not significant, $F(2, 480) < 1$, *ns*, suggesting no age-related change in sex differences (see Table 2).

Partner status. With the exception of young and middle-aged adults, respondents without an ongoing partner relationship displayed higher levels in raw (mean $d = .45$) and controlled nepotism measures (mean $d = .51$). The statistical interaction of partner status with age (comparing Young Adult, Middle Age, and Old Age 3 samples) was significant in both nepotism measures, Fs$(2, 480) > 5.49$, ps $< .01$, indicating that the effect of partner status did not occur before old age (see Table 2).

Parental status. Whereas parental status yielded only small effects in the Old Age 1 and Old Age 3 samples, moderate effects were found in the other samples, suggesting that parents scored higher in raw (mean $d = .25$) and controlled (mean $d = .32$) nepotism measures. The effect of parental status was unrelated to

[3] The computation of individual correlations required variance in both coefficient *r* and measures of relationship quality, and was therefore not possible if respondents either did not report relationships with kin or did not differentiate between relationship partners regarding closeness (Study 2: 76 participants; Study 3: 45 participants) or support (Study 2: 75 participants; Study 3: 68 participants). These cases were not handled as missing because they did not miss information about relationships. For nepotism in subjective closeness, scores were corrected according to the following rule: If the number of kin in the inner circle, the middle circle, or the outer circle were equal to the overall number of network members, the respondents' nepotism score was defined as 1.0, .5, or .25, respectively. If only non-kin were reported and placed in the inner or middle circle, then nepotism was defined as –1.0. In other cases, nepotism was defined as 0. For nepotism in support, the following procedure was applied: If the number of blood kin named as support givers was 0, 1, 2, 3, or greater than 4, the respondents' nepotism scores in this domain were defined as .2, .4, .6, .8, or 1, respectively. If only non-kin were reported as support givers, then nepotism was defined as –1.0. In other cases, nepotism was set to 0.

Table 2
Individual Expressions of Nepotism

		Nepotism in subjective closeness				Nepotism in received support				Nepotism as a function of					
		Raw score[a]		Controlled score[b]		Raw score[a]		Controlled score[b]		Sex[c]		Partner status[c]		Parental status[c]	
Study and sample	*N*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	d_r	d_c	d_r	d_c	d_r	d_c
Study 1															
Old Age 1	386	$.56_a$	.42	.52	.34	.24	.35	.30	.37	**.31**	**.47**	**.59**	**.60**	.08	.14
Study 2															
Old Age 2	499	$.46_b$	.59	.43	.48	$.11_a$	.54	.14	.46	**.28**	**.26**	**.50**	**.42**	**.32**	**.50**
Study 3															
Old Age 3	160	$.51_{ab}$	.62	—	—	$.05_a$	.57	—	—	**.28**	—	**.58**	—	.22	—
Middle Age	160	$.42_b$	.48	—	—	$.08_a$	.51	—	—	**.32**	—	.09	—	**.50**	—
Young Adult	160	$.47_{ab}$	.46	—	—	$.07_a$	.37	—	—	.19	—	.19	—	**.33**	—
Total sample	1,365	.50	.53	.47	.44	.13	.48	.21	.40	**.29**	**.37**	**.45**	**.51**	**.25**	**.32**

Note. Dashes indicate that nepotism scores were not controlled for residential proximity and frequency of contact in Study 3. $d_r = d_{raw}$; $d_c = d_{controlled}$.
[a] Raw scores of nepotism were based on individual Spearman rank correlations of genetic relatedness with closeness and received support, respectively. Individual correlations were averaged across participants using Fisher's *r*-to-*Z* transformation. Means sharing the same subscript in a given column did not differ significantly (Bonferroni's post hoc comparison, *p*s $> .05$).
[b] Controlled scores refer to individual correlations controlling for residential proximity and frequency of contact (in Old Age 1 and Old Age 2 samples with total $n = 885$). Individual correlations were averaged across participants using Fisher's *r*-to-*Z* transformation.
[c] Significant effect sizes (i.e., d_r for mean differences in raw nepotism, d_c for differences in nepotism scores controlling for residential proximity and frequency of contact) are shown in boldface (*p*s $< .05$) and indicate the extent to which women, single participants, and parents displayed higher nepotism scores than men, partner-attached, and childless participants, respectively. Effect sizes were averaged across nepotism in subjective closeness and received support; effect sizes for the total sample were averaged across studies.

age, as indicated by the absence of a statistical interaction of parental status with age (comparing Young Adult, Middle Age, and Old Age 3 samples), $F(2, 480) < 1$, *ns* (see Table 2).

Personality traits. Personality traits were mostly uncorrelated with nepotism scores. Across the five samples, raw (and controlled) scores of nepotism in closeness correlated .06 (.02) with Extraversion, −.05 (−.04) with Neuroticism, −.05 (.04) with Openness, and .01 (.02) with Conscientiousness. Raw (and controlled) scores of nepotism in received support correlated .00 (−.01) with Extraversion, .02 (.05) with Neuroticism, −.05 (−.02) with Openness, and .02 (−.05) with Conscientiousness. Only Agreeableness showed consistent small correlations with nepotism in closeness, mean $r = .12$ (.16), *p*s $< .05$, and with nepotism in support, mean $r = .10$ (.13), *p*s $< .05$.

Heritability. We estimated the heritability of individual differences in nepotism in the twin sample (Old Age 1). MZ twin correlations between raw (and controlled) scores were ICC = .06 (.11) regarding nepotism in subjective closeness, and .14 (.13) in nepotism regarding received support ($n = 133$ MZ pairs). The converging DZ twin correlations between raw (and controlled) scores were .08 (.10) and .28 (.06), respectively ($n = 60$ DZ pairs). Differences between the twin correlations were not significant (*Z*s < 1). As expected, these results indicated that individual nepotism was not heritable.

Discussion

The present research investigated general patterns and individual expressions of nepotism across adulthood. We studied subjective closeness and received support from various relationship partners in five independent samples of German adults ranging from young, through middle, to old age. Our findings are consistent with a possible role of genetic relatedness. In general, the subjective closeness with relationship partners was much more predictable from genetic relatedness than was the received support from relationship partners. Therefore, our first conclusion is that subjective closeness in personal relationships is primarily shaped by nepotism. Our second conclusion is that individual differences in nepotism are psychologically contingent on environmental conditions rather than being the expression of personality characteristics and differential heritability. Taken together, our findings lead us to reemphasize the outstanding role of kinship, and we propose nepotistic adaptations as powerful mechanisms of social regulation.

There are several caveats that need to be considered when interpreting the findings of this research. First, our design was quasi-experimental. The evidence of a causal link between genetic relatedness and relationship quality is thus not conclusive, despite the statistical control of residential proximity and contact frequency in two samples. A second caveat is the possible social desirability of our self-report measures. This suspicion cannot be ruled out, despite the replication of findings across five samples, the use of different interview techniques and variation in relationship coding. Future research may apply alternative measures of nepotism, such as observational or implicit approaches, and use experimental designs that control for third variables.

We studied nepotism in the context of personal networks instead of relying on global ratings concerning attitudes toward kin. A major advantage of the personal network approach is its simultaneous view on a broad range of different kinds of relationships

with kin as well as with non-kin. Therefore, our findings did not rest on special kinds of relationship or isolated kinship systems, but were rather based on the concrete *hierarchy of personal relationships*. Kinship orientation was studied in two ways: first, by the comparison of closeness and support between kin and non-kin types of relationship, and, second, by individual correlations between levels of relationship quality and genetic relatedness, controlling for proximity and contact. Whereas the former perspective addresses general patterns of nepotism, the latter is concerned with its individual expression. We first discuss the general findings, and then turn to the issue of individual differences.

Nepotism Regulates Closeness in Relationships

A total number of 1,365 participants from five samples provided information on 16,943 personal relationships that could be ordered by different degrees of genetic relatedness. Kin and non-kin relationships differed strongly in subjective closeness, but only modestly in received support. Subjective closeness in kin relationships increased with increasing levels of coefficient *r*, whereas among non-kin relationships, only relationships with partners approached higher subjective closeness, and relationships with friends or others were characterized by comparably smaller levels of closeness. In contrast, highest amounts of social support were received from partner relationships, followed by 50%-related kin (including MZ co-twins), whereas lower than average amounts of support were received from all other kinds of kin and non-kin relationship.

The large effect of closeness confirms the assumption by Daly et al. (1997) that closeness characterizes kinship, and we are not aware of any other distal variable predicting subjective closeness to a similar extent. The small effect of received support may reflect that social support in everyday life can be received from various kinds of relationships, regardless of coefficient *r*. Thus, Burnstein et al. (1994) observed that genetic relatedness predicted help in everyday life to a much lesser extent than in life-threatening situations. If it is true that people give more weight to kinship in awkward or emergency situations than in everyday situations, then people must be equipped with a psychological mechanism through which they know for sure on whom they could rely, or whom they should support in case it should be required. Davis and Daly (1997, p. 413) argued that one element of the evolved psychological mechanisms that regulate familial affiliation must be "love," whose primary function is "to cause a desire to invest in kin." We suggest that subjective closeness in personal networks is a valid heuristic for this venture, because it is highly related to kinship.

Everyday support, in contrast, may be more shaped by reciprocity. Although the negotiation of reciprocity may vary between relationship types, the social norm of reciprocity is universal, and predicts that relationships may become unstable or even be dissolved through moralistic aggression, arising when partners experience unbalance or disadvantage (Clark & Mills, 1979; Gouldner, 1960; Trivers, 1971). Nepotism may certainly affect support in everyday life as well, but reciprocity is more likely a mechanism that regulates the flux and flow of support under ordinary circumstances. However, this situation may radically change in case of an emergency: When support is important in order to survive, as is evident in case of natural disasters, nepotism inevitably becomes activated, and the feeling of closeness is perhaps a reliable cue to whom one can truly count on.

The fact that partner relationships received highest levels of closeness and support is not surprising, given that in all societies, partnerships, especially marital relationships, are valued as a sort of quasi-kinship relationship. The individual may be inclined to view his or her marital partner as kin, because both usually reproduce together and have descendent relatives in common (Daly et al., 1997). Under some circumstances, such as life or death, a partner may even provide a more critical impact on a person's reproductive success. Unlike most other mammalian species, the human species is unique in that mating partners usually (albeit not necessarily) form a romantic attachment relationship in order to establish relationship continuity. It is in this sense that several attachment scholars have suggested that the attachment behavioral system in romantic relationships (as well as in infant–caregiver relationships) is another kind of proximate psychological adaptation that enhances the probability of the survival of offspring (e.g., Chisholm, 1996; Zeifman & Hazan, 1997).

Is Subjective Closeness a Proximate Cue to Genetic Relatedness?

Thus far, we have argued that genetic relatedness is a *distal* factor predicting the experience of subjective closeness in relationships. This interpretation may be qualified, because closeness with kin is also culturally determined through societal laws, norms, and customs, and also by physical proximity and interaction accessibility of kin. However, viewed from a genuine evolutionary perspective and using Hamilton's (1964) rule as a theoretical framework, such social conventions appear as an outcome, or a byproduct, rather than as determining factors of the association of kinship with closeness.

Instead of looking at subjective closeness from the perspective of what Tooby and Cosmides (1992) have called the Standard Social Science Model, one could also interpret subjectively felt closeness as a proximate cue to genetic relatedness. This is because humans are unable to recognize copies of their genes in others, a phenomenon Dawkins (1976) called the "green beard effect," which forces individuals to rely on indirect cues such as familiarity and phenotypic matching. Whereas phenotypic matching may be processed by similarity judgments to estimate the degree of relatedness, familiarity may be strongly triggered by the subjective closeness with social partners as indicators of genetic relatedness. Therefore, subjective closeness may serve, among others, as *one* proximate cue to genetic relatedness.

The Individual Expression of Nepotism Is Malleable

We operationalized the individual expression of nepotism by the intraindividual rank correlation between different levels of coefficient *r* and the converging levels of subjective closeness and received support. Consistent with the observed mean differences between kin and non-kin relationships discussed in the prior section, the mean individual correlation between subjective closeness and genetic relatedness was large, whereas the mean individual correlation between support and relatedness was small. This correlational pattern was replicated across the five samples, including young, middle-aged, and older adults.

Moreover, correlations were still substantial in two samples of older adults when controlling for residential proximity and frequency of contact with each network member. Whereas the mean controlled correlation of closeness and genetic relatedness was smaller than the raw correlation, the mean controlled correlation of received support and relatedness was even larger, suggesting that perhaps support would be more determined by nepotistic inclinations, if it was not constrained by spatial distances and restricted interaction accessibility. It was especially remarkable that genetic relatedness was inversely related to residential proximity, and not associated with the amount of contact. This is, however, not surprising, given that older adults in Western contemporary societies usually do not cohabit with (grand-) children or other kin, but instead reside closer to their partners, neighbors, friends, or professional helpers. Humans may have certainly evolved in close-knit and co-residing kin groups, but because Western societies have become increasingly mobile, genetic relatedness, proximity and interaction frequency in adult relationships are not inevitably linked. Therefore, it is all the more noteworthy that within personal networks, the genetic relatedness with relationship partners was still strongly associated with subjective closeness, even when controlling for contact and proximity, which are typically associated with relationship outcomes.

In line with our expectation, the individual expressions of nepotism showed substantial variability, which is generally consistent with the evolutionary perspective on psychological adaptations. Although nepotistic adaptations are basic social tendencies inherited by each individual of the human species, adult humans may seek out diverse social environments, as reflected by the variability in network size and composition across all participants of the study. People's environment primarily consists of other individuals, which is why Buss (1999b) argued that individual differences between one's relationship partners represent important vectors of the human adaptive landscape. The individual expression of nepotism may be therefore adjusted to the distinctiveness of others, not only regarding coefficient *r*, but also regarding the ability of kin and non-kin to benefit from investment. Nevertheless, the ultimately established fit between a genetically based nepotistic inclination and relationships is not arbitrary, rather it is part of the adaptive inheritance founded on countless transactions that were "tested" in the evolutionary past. We tested some of the candidates that may contribute to this fit, and ruled out differential heritability and personality traits.

Individual Nepotism Is Unrelated to Heritability and Personality Traits

Our study combines, in an exemplary manner, behavior genetic methodology and evolutionary research questions. One basic tenet of evolutionary research says that the significance of a psychological adaptation can be most powerfully demonstrated by revealing its low, or even zero, heritability. For example, a finding that two different lines of animals respond differently to the same degree of kinship in members of the same species would be a most surprising finding for evolutionary psychologists and sociobiologists (Buss, 1999b; Crawford & Anderson, 1989; Daly et al., 1997; Falconer, 1960). However, we are not aware of any study from the zoological or sociobiological literature that has ever empirically investigated this assumption regarding nepotistic adaptations. We used a twin design; as expected, the results clearly provided no evidence for heritability.

In line with these findings, nepotism was only weakly related to variation in basic personality traits, which have a mean heritability of almost 40% (Plomin & Caspi, 1999). Of the Big Five personality traits, only Agreeableness yielded consistent and small correlations with nepotism, suggesting that pleasant and obliging people were slightly more nepotistic than others. This finding supported our expectation that nepotistic adaptations are relatively insensitive to variation in basic personality traits.

Individual Nepotism Is Psychologically Contingent on Biological Sex and Social Context

We found variation in nepotism depending on biological sex and social context variables. The effects were replicated across both domains of relationship quality and across the five samples (with few exceptions), and should be interpreted as interaction effects reflecting that the individual correlations between relationship outcome and genetic relatedness were moderated by sex, and by partner and parental status.

Consistent sex differences in both domains, as well as in raw and controlled measures of nepotism appeared across the five samples, and replicated prior findings highlighting the role of women as "kin-keeper" (Essock-Vitale & McGuire, 1985; Euler & Weitzel, 1996; Salmon & Daly, 1996). The effect was only weak in young adults aged about 30 years on average, when both sexes are typically concerned with reproduction and parental investment. The small effect may be due to a slightly lower level of the men's paternal investment, which usually varies as a function of paternal certainty, alternative mating opportunities, and the likelihood of offspring survival, at least under conditions of the environment of evolutionary adaptedness (Geary, 2000). The sex difference was more pronounced in middle-aged and older adults, who are more likely to be busy with grandparent efforts. Although the statistical interaction of sex with age was insignificant, the sex difference tended to increase in middle-aged adults of about 55 years of age, when women have passed menopause, but while men still can reproduce. In general, traits and behaviors of postreproductive individuals are neither selected for nor against, simply because these individuals have already reproduced (Baltes, 1997). A notable exception, however, may be found in the nepotistic inclinations of middle-aged and older women, who even in traditional societies, can expect to live more than 2 decades beyond menopause, and can potentially increase the survival of progeny. Thus, from an inclusive fitness perspective, the more-pronounced sex differences in nepotism in middle-aged and older adults are psychologically adaptive (Davis & Daly, 1997).

Parental status as such was also associated with nepotism. Adults who had their own children (and grandchildren) displayed higher raw and controlled nepotism scores than childless participants. An exception were the childless participants of the Old Age 1 and Old Age 3 samples who may have compensated the lack of feeling close to (grand-) children by being close to other kin (e.g., Rook & Schuster, 1996). Although the effect sizes were moderate in the other samples, it is important to recognize that childless participants were still nepotistic to a substantial extent, suggesting that even childlessness does not necessarily exclude the possibility of feeling close to kin.

Moderate effects were also found for partner status. Participants in an ongoing partner relationship were less nepotistic than single participants, because the partner relationship was the most important one in terms of subjective closeness and support, and single participants may have compensated for a close partner relationship by intensifying ties to kin. However, as was shown by a statistical interaction effect of partner status with age, this effect may not occur before people reach old age. Thus, being single in old age may strongly activate nepotistic tendencies.

Future Directions

Although we studied young, middle-aged, and older adults, the present research is not fully representative of the role of kinship across the life span. The human life history consists of different stages with specific strategies, such as somatic efforts associated with building the body, mating, parenting, and grandparenting. It would be interesting to undertake longitudinal research on kinship orientation across the whole life span, and study the very different meanings of giving and receiving nepotistic investment at different life stages involving different developmental tasks and challenges. From this perspective, it should be additionally acknowledged that nepotistic adaptations are also relationship specific (Daly et al. 1997). According to the basic tenet of evolutionary psychology, claiming that evolved psychological mechanisms are domain-specific solutions to adaptive problems, it is likely that the mechanisms underlying, for example, parent–child relationships are different from mechanisms regulating sibling relationships, and the same may be true for descendent and collateral kin. Future research is required to further study these basic processes and relationship-specific features of kinship psychology.

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