

A Meta-Analytic Approach to Telework and Work-Nonwork-Conflict –

20 Years of Asking "If" not "How"

Thore Pingpank, Jan Siefke, and Sönke Tilgner

Institute of Psychology, Kiel University

Author Note

We have no known conflict of interest to disclose. We want to thank Prof. Udo Konradt, Martina Oldeweme and Alexander Nath for their valuable comments on this topic. All authors have contributed equally to this study.

Correspondence concerning this article should be addressed to Thore Pingpank, Institute of Psychology, Kiel University, Germany. Email: pingpank@psychologie.uni-kiel.de.

Abstract

Objective The goal of this study was to investigate the relationship between telework and the intensity of work-nonwork-conflict (WNC) and nonwork-work-conflict (NWC) with a meta-analytical approach. We searched for possible moderators for this relationship in particular.

Method In a random-effects-model, we analyzed 29 correlational studies ($N = 73,647$) with 43 effect sizes that included a range of domain conflict types shown by teleworkers, including work-family-conflict (WFC) but also broader concepts. Additionally, we checked the primary studies for moderators using the resources-demands-model (Schaufeli & Bakker, 2004) as our theoretical framework. Moderators that could be extracted included Support, Children, Boundary Management, Total Work Time and Flextime. **Results** Results in the primary studies as well as measurement approaches in this fragmented field of research were very divergent. We found no significant effect for the relation between WNC and telework ($\rho = 0.039$), or NWC ($\rho = 0.025$). Also, we were not able to find significant moderators or study characteristics to explain the variability between the studies. **Conclusions** There was no meta-analytic evidence for the mentioned relation. Because the primary studies itself show small effects, we argue that those effects might depend on situational and psychological variables, which were barely researched. Therefore effects of telework cannot be explained by top-level-variables and there is a need for research on those variables to make recommendations for practitioners.

Keywords: telework, work-nonwork-conflict, resources, demands, boundary management

A Meta-Analytic Approach to Telework and Work-Nonwork-Conflict – 20 Years of Asking "If" not "How"

Most people would probably agree to the expression „home, sweet home”, but less would agree to „office, sweet office”. But what if both places become one and the same through telework? US labor market data show that about 13 percent of full-time wage and salary workers in the United States worked exclusively from home at least one day a month in the year 2017 (Pabilonia & Vernon, 2020). With the COVID-19 pandemic, this topic received global attention, as working from home became a necessity and has led to numbers of employees engaging in telework almost doubling. Recent EU labor market data show that 39% of employees were working from home at least several times a month following the pandemic, compared to 20% pre-COVID (Sostero et al., 2020).

The term telecommuting has been introduced by Nilles (1975) to describe “a telecommuting network [that] has computational and telecommunications components which enable employees of large organizations to work in offices close to (but generally not in) their homes, rather than commute long distances to a central office”. Since then a wide range of synonyms for telecommuting has been developed, including remote work, telework, and flexible work arrangements (Allen et al., 2013). Flexible work arrangements refer to options regarding work that permit flexibility in terms of *where* and *when* work is completed. Flexplace refers to the option of flexibility regarding the *where* to work. Flextime is understood as the option of flexibility regarding *when* one works (Allen et al., 2013).

In distinction to other approaches, we use the term telework to refer to working from home and keeping in contact with the workplace for at least part of the week. This definition is close to Bailey and Kurland (2002) but differs in the criteria of location, as we focus on

working from home, whereas Bailey and Kurland allow any other location that is not the traditional work office. We also choose not to include means of electronic communication technology in the definition, as older forms of telework would be excluded.

Our research focuses on working from home because we assume that the interaction between work and nonwork only changes in meaningful ways when the working conditions change as well, such a change is not accomplished when working in a telework center that still shares almost all characteristics with the regular office. Another reason being that telecommuting from home, through cheaper and better information technology, became the most present setting in the COVID-19-pandemic.

Working at home may be a blessing to the teleworker – when work is done at home it becomes a lot easier to take part in the family life, for example picking up the kids from practice or helping out in the household. In accordance with this thought previous psychological research suggests several advantages for teleworkers including improved time autonomy, more well-being at the individual level and an increase in the overall organizational efficiency (Pyöriä, 2011). Other benefits are more perceived autonomy and job satisfaction (Gajendran & Harrison, 2007). Especially autonomy and job control might help in decreasing the conflict that arises between incompatible work and nonwork demands. Moreover previous research provides support that telework erases the need for commuting and makes it possible to adjust the working time to the demands that workers face (Raghuram et al., 2001).

But it might as well prove a curse – as it is harder to stop kids or partners from interrupting work when all that separates the two domains is the door of the teleworkers office space at home (provided they even have such an office space). Bailey and Kurland

(2002) argue that teleworkers may suffer from a sense of isolation from co-workers. In addition teleworkers tend to work longer hours compared to their non-teleworking colleagues (Peters et al., 2009).

This study aims to describe a conflict between a work domain and a domain of the personal life which seems to be a common issue in a telework situation. There is a wide range of terms that are used to describe such interactions between two domains. While all authors share the viewpoint that one part of this interaction is rooted in the work domain, they differ in describing what exactly this domain is in conflict with. The by far most researched example of such a conflict is the one between work and family. Nevertheless it is important to look at non-work roles beyond this. Other possible terms include the nonwork-domain, the 'home' or even the whole life as domains. It remains unclear what exactly separates these concepts from one another, but commonly used scales in this field of research show that the home, nonwork and life domain seem to refer to the personal life in general rather than just the family (Fisher et al., 2009; Gutek et al., 1991). Items measuring the home domain mention fulfilling duties at home, whereas family items ask about the impact of the children or spouse on work. Nonwork items often include hobbies as well as aspects from the home and family domain, the life domain is measured with similar items. But the differences between these domain conceptions are not clear and there are similarities between home, nonwork and life domain. A majority of studies use work-family conflict (WFC) or family-work conflict (FWC) as their construct, defined by Weer and Greenhaus (2014) as "conflict [that] occurs when the pressures from the work and family domains are mutually incompatible", representing a more narrow approach focused only on family. As mentioned above, others use broader conceptions of this conflict - such as work-nonwork conflict, work-home conflict or work-life conflict. Conceptually the nonwork domain seems to be the most

promising framing for our analysis because we argue that all other domain conceptions can be subsumed under it. Even with work-family-conflict as the most used variable in the field, we will use the terms work-nonwork conflict (WNC) and nonwork-work-conflict (NWC) in this paper when relating to general theoretical considerations.

When nonwork and work are incompatible domains, the directionality of this conflict must be taken into account. Each of the roles can potentially have an impact on the other and lead to a distinct type of conflict depending on the direction. Empirical research supports this idea. Mesmer-Magnus and Viswesvaran (2005) provided empirical verification that family-work conflict is indeed distinct from work-family conflict.

Although telework has become increasingly relevant within the last decade, it is still unclear if shifting the workplace to one's home has a positive effect on the incompatibility between work and nonwork. There are meta analytic studies concerning the connection between telework and work-nonwork conflict, but their findings remain inconclusive and a theoretical explanation for the found ambiguity in evidence is missing.

To gain more sophisticated results regarding this field of research, we conduct another meta-analysis including new research and a widened scope of criterion variables.

Additionally we examine whether there are moderating variables that affect the type of influence that telework has on the interaction between work and nonwork. Our approach adds to the existing literature by not only including studies with WFC and FWC, but any study mentioning a conflict between work and the personal domain, as long as the dimensionality was taken into account. While we use the term of WNC and NWC exclusively we still took studies into account that used the other terms, simply because there has been little agreement on what separates these concepts from one another. It is a common phenomenon that the

same scale is used to measure different constructs and that the construct intended to be measured does not always correspond to what was actually measured. Taking a closer look into the wide range of criterion variables and the used scales might be a progress towards differentiating between the different types of conflict that are mostly used synonymously at the moment.

We are also at a point in time where there soon will be new amounts of telework research, all part of something we like to call “COVID-science”, that is research where the involuntary telework forced by pandemic restriction is being measured. To get a better understanding there has to be a comprehensive overview of the state of telework research up to this point where primarily voluntary telework was explored, as it is unlikely that this type can be compared with involuntary telework (Kaduk et al., 2019).

The job demand-resources model developed by Bakker and Demerouti (2007) as well as Demerouti et al. (2001) provides a useful framework for our meta-analysis regarding a possible explanation for the impact of telework on the interaction between work and nonwork. The theory suggests that characteristics of work activities can be divided into two categories. Demands are physical, psychological, social or organizational aspects of a job that require effort that is either physical and/or psychological. Resources are defined as “physical, psychological, social, or organizational aspects of the job that either/or (1) reduce job demands and the associated physiological and psychological costs; (2) are functional in achieving work goals; (3) stimulate personal growth, learning and development” (Schaufeli & Bakker, 2004). While job demands are detrimental in nature and have a stressful effect on work-home interference, work resources support employees in achieving their goals and stimulate personal growth, learning, and development. Specifically, job resources are proposed to buffer the negative impact of job demands.

Since telecommuting shifts the working context to an employees home and causes blurred boundaries between the two domains (Basile & Beauregard, 2016) we argue that demands and resources of both work and nonwork should be included in the theoretical framework for telecommuting. Therefore we assume that the relevance of the interaction between cross-domain resources and demands can be related to the emergence of a conflict between work and nonwork.

In general it seems that the newly available resources are equal to or outnumbering the new demands, as telework leads to increased job autonomy and more temporal resources (Gajendran & Harrison, 2007; Raghuram et al., 2001). Demands of the two roles can be dealt with simultaneously and incompatibility can be prevented, possibly lowering the WNC as well as NWC. It should be noted that blurred boundaries can also make it easier for one domain to disturb the other. However, this can be counteracted by segmentation strategies, for example the spatial separation by a home office space. Empirical findings partially support the idea of beneficial effects, for example Allen et al. (2013) listed four meta analytic studies that examine the relationship of WFC/FWC and flexible work arrangements, which include flexplace. They analyzed their findings separately for Work Interfering Family (WIF) and Family Interfering Work (FIW). For FIW the other studies reported negative effect sizes ranging from nearly null to medium and their own analysis found a negative medium effect. The pattern is similar for WIF, the negative effect size of the other studies ranged from very small to medium and their own analysis found a small negative effect. While not entirely convincing, this still provides evidence for a possible negative relationship between telework and WNC as well as NWC, even if there was a large heterogeneity in the results of the studies. Considering the above mentioned arguments and empirical research we propose the following hypothesis:

Hypothesis 1: The amount of telework is (a) negatively related to WNC and (b) negatively related to NWC.

As telework shifts the work context into one's own home, the role conflict between work and nonwork can potentially be reduced. However, one has to take into account that the circumstances of the individual employees differ a lot from each other. Resources and demands are not isolated values that sum up to good or bad work conditions, but they interact in rather complex ways. It is conceivable that some demands come with the establishment of telework while others have already been there before telework is established. Either way these demands are present in the telework situation and influence its outcome on WNC and NWC. Because of the overwhelming usage of cross-section comparisons in primary studies and due to methodical limitations, we limit the gaze of our study to investigating characteristics of the work situation without being able to analyze changes over time. Based on these assumptions, we theorize that in a telework situation some resources or demands might play a more important role in predicting work-nonwork-conflict than others. Empirical research supports that idea. Sabil and Marican (2011) found a significant positive relationship between the amount of work hours and work family conflict. Another possible demand, children living at home, was also shown to have a significant positive correlation with WFC and FWC by Golden (2012). This clearly shows that simply introducing telework to one's employees might not be enough to achieve the positive effects of telework, which might be a possible explanation for the inconclusive results of previous meta-analysis.

It is crucial to mention that moderators which fit the demands category are quite rare within primary studies in this field. There were no specific moderators selected at this point, since it was not guaranteed that they would yield enough data to perform an analysis. The moderators used will emerge from the data extraction step. Concluding from the empirical

research as well as the theoretical model of Schaufeli and Bakker (2004) we propose the following hypothesis:

Hypothesis 2: In the telework situation, demands moderate the relationship between the amount of telework and work-nonwork conflict and nonwork-work conflict; specifically, when demands are high, (a) the correlation between telework and WNC, as well as (b) NWC will increase.

Similar to the demands, one could imagine that some benefits of telework can only unfold under certain circumstances. An example might be that flexibility in the management of demands from work domain and nonwork domain is only gained if there is also a flexible time management (flextime) available to the employees.

Additionally it might be possible to prevent some forms of problems (being a demand and requiring emotional/cognitive effort) by workplace characteristics. As an example, organizational support might reduce problems with adaptation to new aspects of the work domain and lower the social isolation. This idea is also supported by empirical research - Carlson and Perrewé (1999) showed social support having a negative relationship with work role conflict and work time demands. Those factors showed a positive association with WFC, making it possible to assume that social support should influence WFC or WNC in general negatively. There is also evidence connecting supervisor work-family support and supportive work-family culture to less amounts of WFC (Voydanoff, 2004). Shockley and Allen (2007) found another resource, flextime to be negatively associated with WIF as well as FIW, further adding to the idea that resources should reduce WNC as well as NWC. Because of the theoretical consideration together with the provided empirical research, we propose the following hypothesis:

Hypothesis 3: In the telework situation, resources moderate the relationship between the amount of telework and work-nonwork conflict and nonwork-work conflict; specifically, when resources are high, (a) the correlation between telework and WNC, as well as (b) NWC will decrease.

Resources share the same limitations when looking at possible moderators. A selection of specific moderators is not possible beforehand as it is likely that they would not yield enough data to perform the analysis.

Method

Inclusion and Exclusion Criteria

This research addresses the effect of telework on WNC and NWC. Therefore, studies had to contain some measure of telework (our independent variable) and at least either WNC or NWC as the dependent variable. If a study met this criteria, it was also tested for reporting a correlation of these variables. Quasi-Experimental studies were also included when the results on our target variables were reported as a point biserial correlation. Studies were excluded if (1) telework was confounded with other flexibility measures (e.g. flextime) (2) the research only contained qualitative information (3) studies dealt with after hour use only and (4) studies captured availability instead of use of telework. Further we did not take studies into account that examined the relation between telework and work-life balance. We made no restrictions regarding the publication year and the participant populations. All papers found in the database search were in the English language.

In the first step, an abstract screening was conducted. The abstracts were checked for the occurrence of the dependent and independent variable by two of the authors who split the total amount of studies in half. In the second step, each rater checked the other half for

plausibility. We tried to obtain the full text version for further analysis, articles that could not be retrieved were not included into the next step. The resulting full text articles were analyzed for further eligibility. All studies that were eligible were double-coded for the above mentioned criteria. In one case of overlapping samples, the study with usable data was included.

Literature Search

To avoid bias of discipline, electronic literature search was conducted in a variety of databases: PsycINFO, EBSCO Business Source Premier/EconLit and Web of Science. In addition to terms like *telecommuting*, we used a proximity operator to find separated terms like *virtual work* due to the divergent operationalizations in the literature. Truncation was used to widen the scope from specific terms to all of its possible declinations. The search followed the following pattern: (telecommut* OR telework* OR e-work OR computer-mediated OR work-at-home OR homework* OR homeoffice OR mobile-work OR ((distribut* OR virtual* OR remot* OR connect* OR flexible OR home* OR mobile OR distance* OR autonom*) ADJ2 (office OR work* OR team* OR schedul* OR workplace OR organizat*))) AND (work*family* OR family*work* OR work*nonwork* OR ((famil* OR nonwork* OR non-work* OR work*) ADJ2 (conflict* OR interfer* OR spillover))). Even though the proximity operator varies in different databases, it did not vary in function, representing a search in which there can be a major word between the two parts.

Coding Procedure

In order to collect every relevant correlation we developed a data extraction sheet which was tested on a randomly selected sample out of our study-pool and optimized during a coding training session. In total four review authors were involved in the data collection

process. To ensure that no mistakes were made, every correlation was checked by two authors independently. If a disagreement regarding a correlation occurred, both authors resolved the issue by discussion. All effect sizes and coding decisions are included in the Appendix.

The overall interrater reliability was perfect ($\kappa = .98$). Eight studies that met the inclusion criteria did not contain enough numerical data. We contacted the authors for further information via email. Only one provided the necessary information.

Coding of Study Characteristics

Year

The year of data collection, not the year of publication was coded. If the year of data collection was not mentioned, the year of publication was chosen. The studies were split into two groups, one containing the studies from 2001 to 2010 ($k = 18$), the other one containing the studies from 2011 to 2020 ($k = 24$).

Age

For every study the average age of the sample was extracted. Based on these means, studies were sorted into two categories by a median split resulting in a higher ($k = 13$) and a lower ($k = 17$) group. A study was rated as higher, when it reached the overall median of 43.0.

Coding of Variables

WNC/NWC

Any dependent variable that indicated a conflict between the work domain and

personal life was coded. Studies yielded measures about an interaction of the work domain with the family, nonwork, life or home domain. Further we considered the term *interference* to be equivalent to the term of *conflict* for our meta-analysis, meaning that for example work interference with family was coded the same as work-family-conflict, when the construct was depicted in the same direction. Studies that investigated a balance between the two domains were not included since this research focuses on the occurrence of a conflict due to incompatibility. We did not accept *balance* as a complimentary measure for *conflict* from a quantitative point of view. When coding the type of conflicting domain, some studies assessed constructs with scales that were originally used for a different conception, apparently assuming constructs being the same. In this case, we tried our best to sort it into our scheme based on the items used.

In a few studies the authors distinguish between subdimensions of the dependent variable (e.g. WFC was measured time based, strain based, and behavior based). In that case we averaged the correlation of the subdimensions using the formula provided by Schmidt and Hunter (2015).

Telework

We view telework as work located in one's private space, meaning only place, not time of work is required to be flexible. In contrast to common definitions the usage of technology was not a prerequisite for inclusion in our study. This was done to widen the scope of our study regarding older studies on the topic of telework. In each study that met the inclusion criteria telework was the independent variable as previously defined, either measured as intensity ranging from once a week to almost full-time or as a dichotomous variable. Only studies reporting actual use of telework as well as telework without any other confounding

flexible work arrangements were included in the meta-analysis. If different types of telework activities were differentiated (e.g. teaching hours, reading hours), the correlations were averaged.

Moderators in General

For the moderator analysis, only the study-level means could be used for assignment. The moderators contain resources and demands that could potentially have a moderating effect on the conflict between work and nonwork. Many important variables are missing in the majority of studies, making it hard or impossible to perform a quantitative meta-analysis on them. Those included psychological variables, such as boundary management (included in 4 studies) or structuring behavior (included in 1 study).

Something that became very clear in the process of conducting this meta-analysis is that the field of research regarding telework is very heterogeneous in usage and definition of the associated variables. Since there has not been enough research to investigate certain moderators in detail, we examined the included studies with regard to the frequency of all variables that could be considered for a moderating role.

As usable variables, we identified two potentially moderating demands and one resource that have been investigated sufficiently. More precisely we coded the work hours and the amount of children as demands and schedule flexibility as a moderating resource.

Since there are some variables of interest that have not been researched sufficiently for a meta-analytic investigation but showed some conceptual similarity, we singled out two more constructs that cluster similar moderators. We will describe both clustered constructs, followed by the three extracted variables.

Support

Support refers to perceived supportive behaviour shown by colleagues or other persons from the work domain. The following variables were merged to result in this generic construct: colleagues support, family supportive supervisors, organizational support and work social support. Support was expected to reduce the NWC as well as WNC. For Likert-Scales were transformed into a range from zero to one, zero representing the lowest possible response and one the highest. Based on the transformed mean, studies were sorted into two categories (high/low) with a median split – the median (only for WNC) being 0.65.

Boundary Management

Boundary management refers to the degree to which one strives to separate boundaries between work and home roles (Kossek et al., 2006). This second generic construct consists of boundary management strategy, preference for segmentation, work/home protection preference, and permeability at work/home (reverse coded). In case of separate measures for the home and work domain the correlations were averaged to result in a general permeability or protection preference. Measures of Likert-scales were transformed into a range from zero (lowest possible answer) to one (highest possible answer), where a high score always represented segmentation preference. This also included studies viewing boundary management as a bidirectional construct, which can be seen as facilitation to merge the two scales. Following these rules, we interpreted a score below 0.48 (the median) as a tendency for integration, whereas a score over 0.48 was interpreted as segmentation.

Children

It was theorized that when the amount of children is heightened, WNC and NWC are increased due to the high amount of demands caused by children. The variable was aggregated out of the following variables: children under the age of five, number of children,

number of dependents under the age of 18, and children living at home. Madsen (2006) used a categorical variable. We tried to reconstruct the values, but it is possible that the means are underestimated for that study. Again studies were split into two categories by a median split, when exceeding 0.88 children a study was rated as high in the WNC sample, for the NWC sample the median was 1.53.

Work Time

Work time refers to the total amount of time spent with work per week. Other forms of information (e.g. monthly time spent working) were converted to these. A median split was conducted, with the median in the WNC sample being 46.48 and in NWC 48.71.

Flexitime

Flexitime means the flexibility regarding the time of work. An example for flexitime is working outside the regular office hours or not working all daily hours consecutive. We did not only use flexitime but also related variables like schedule flexibility or schedule control. Again, all Likert-Scales were transformed so they ranged from zero (lowest possible answer) to one (highest possible answer). Only for WNC the median split could be done, with a median of 0.69.

Statistical Issues

The statistical analysis based on a random-effects model was conducted with R (R Core Team, 2020), the used package was metafor (Viechtbauer, 2010). To test the relationship between telework and the forms of conflict, the main effect was estimated as a weighted mean of the single effects. The weighting was based on the number of participants. The estimation was carried out with the extracted correlations as well as the

effect sizes corrected for reliability of the dependent variable. This was based on the formula provided by Schmidt and Hunter (2015). As a simplification, only the reliability of the WNC/NWC was used, while the reliability of the amount of telework was assumed to be one, as the data provided by the primary studies was not sufficient enough to estimate the reliability of the provided measures for telework.

Nine studies did not report the reliability of the measured construct. In that case we imputed an average reliability of 0.855. The extent of heterogeneity was estimated using the Hunter-Schmidt method, which is suitable for the estimation of correlation coefficients in random-effect models. The Knapp-Hartung adjustment was used. *Cochran's Q* was calculated as well as the I^2 statistic.

We conducted the analysis once for all studies in the pool and then separately for both subgroups, representing work-nonwork-conflict and nonwork-work-conflict. To differentiate between different forms of conflict, we also used a finer distinction into four variable categories for which we also performed a subgroup analysis. These subgroups were Work-Family-Conflict, Family-Work-Conflict and broader constructs, summed up under the rather artificial terms *work-*-conflict* and **-work-conflict*. For the following moderator analysis within the two conflict directions, we performed a similar subgroup analysis using the moderators mentioned above. As a next step a sensitivity analysis was conducted to identify possible bias, including a cumulative forest-plot. The trim-and-fill procedure following Duval and Tweedie (2000) was also conducted in an attempt to find publication bias.

Results

Database Extraction

Database extraction was performed on the 13th of August in 2020. The search in

PsycINFO yielded 720 results with the default „mp“-searchmode (includes title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh). Due to technical reasons, we selected the advanced search mode and entered the keywords for the telework and the work-family-terms separately, then merging the two searches with the AND function. For the search with EBSCO we selected the databases Business Source Premier and EconLit. In total they yielded 945 results in advanced search mode (Boolean/Phrase). The fields were not specified (default settings) and the function „apply equivalent subjects" was activated. The search in Web of Science yielded 939 results in the basic search mode, where the two parts of the query were connected with AND. The searched field was ‚topic‘ which contains title, author, keywords and keywords plus.

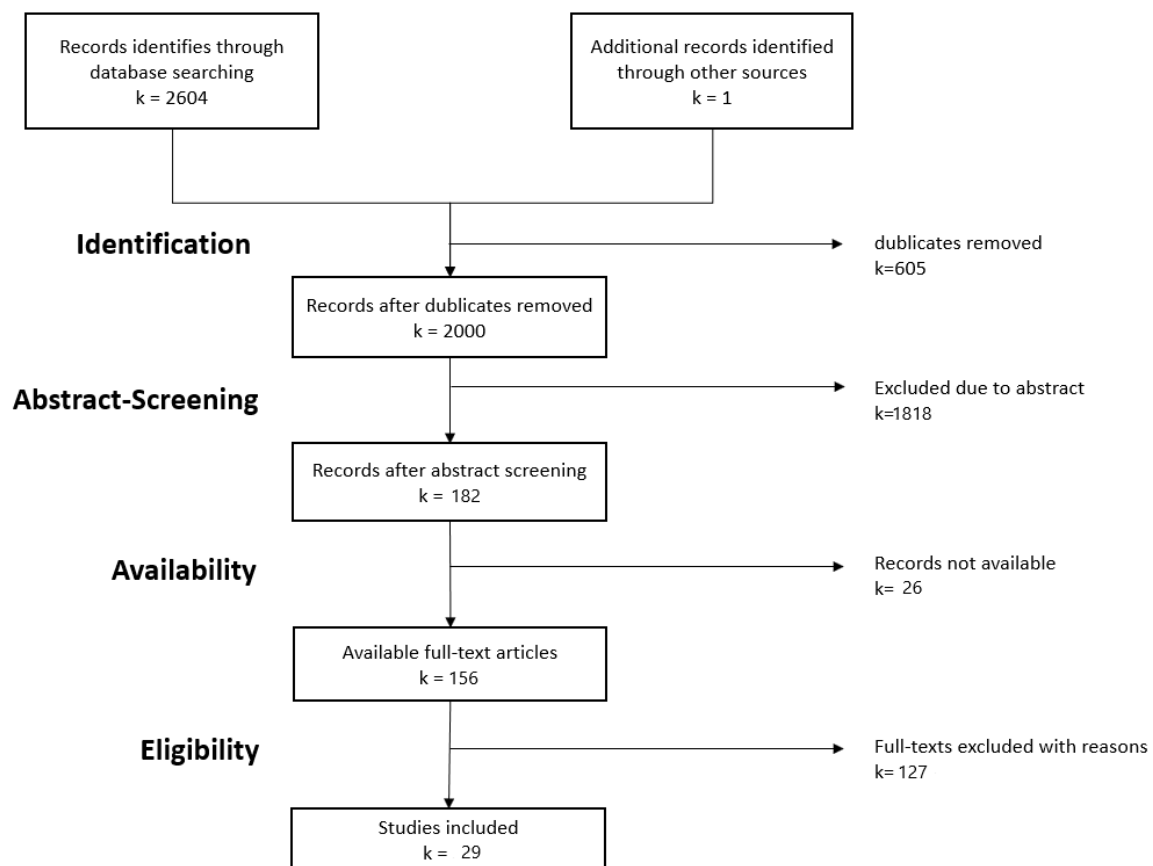
The overall database search yielded 2604 results. In the first step, all duplicates were removed resulting in 2,000 articles of interest. Additionally we contacted several authors who published articles in the domain of interest asking for unpublished literature in order to reduce the “file drawer problem” (Rosenthal, 1979). No further articles were found using this strategy. The remaining 2,000 potential studies were screened for eligibility by at least two of the authors independently.

Coding Procedure

In the abstract screening 182 articles were chosen to be investigated further. Out of these we had to exclude 26 articles because the full text was not available. 29 studies fulfilled the eligibility criteria and were included into the quantitative analysis. An overview of the process can be found in Figure 1.

Figure 1

Process of Study Inclusion



Characteristics of Selected Studies

The final set of data contained 29 studies, a total of 43 correlations and an overall sample size of 73,647. All studies were conducted between 2001 and 2020 and were written in the English language. When looking at the gender distribution a gender was classified as dominant when one gender made up at least 55% of the studies population. In 13 studies the dominant gender was male, eight studies reported female as the dominant gender and seven showed an equal distribution. One study failed to mention the gender percentage sufficiently. The sample sizes in the studies varied, the smallest being 71, the largest 24,436. There were two types of studies included in the analysis - 25 being journal articles and four dissertations. The mean of age of the sample was reported by 21 studies (31 effect sizes), with a mean age ranging from 28.45 to 50.56. Five studies provided information about a support measure (six

effect sizes). The amount of children was mentioned in 13 studies (21 effect sizes). Tendency of boundary management was included in six studies (nine effect sizes), nine mentioned the mean work time (14 effect sizes) and flextime was found in eight studies (11 effect sizes). Not all of these could be used in the moderator analysis, due to values being exactly the median or not enough studies existing in the particular subgroup. Through our choice of database we were able to gather studies from the global research community, incorporating studies from Belgium, the Netherlands, Costa Rica, Sweden, Germany and Canada into our analysis - with the highest number of studies being from the USA. An overview of all studies can be found in the appendix.

Overview over Effect Sizes in General

Of the 43 effect sizes, 22 (51.2%) were negative and in the hypothesized direction, and 21 (48.8%) were positive or equaled zero. The largest correlation was 0.25, the lowest was -0.27. Reliability of conflict measures ranged from 0.67 to 0.94.

From 43 correlations, 16 were assigned to our conception of work-family-conflict, ten were assigned to family-work-conflict. Furthermore there were 12 correlations about broader concepts concerning the personal life in general, summed up under the artificial term work-*-conflict, and four studies for the opposite direction were assigned to *-work-conflict. One studie was only included in the general analysis as it could not be sorted into any of these categories.

While collecting effect sizes, we had to aggregate correlations in 11 studies, from which nine were aggregated because of multiple measures and two due to more than one measurement time. Out of the not aggregated correlations, 16 were significant with a p-value < .05. Out of the aggregated correlations, three contained at least one significant correlation.

One was merged out of significant correlations only, the rest being a merger of non significant findings.

Out of the effect sizes, 27 effects could be classified as Pearson-Correlation representing a relation between two continuous variables which, in our context, represents a relation between the amount of telework and WNC/NWC. 15 effect sizes were Point-biserial with a binary specification of the teleworking conditions, for example from quasi-experimental designs. For each direction (WNC/NWC), a subgroup analysis was performed to test for systematic differences. The test was neither significant in the WNC group ($F(2, 26) = 0.3217, p = 0.7278$) nor in the NWC group ($F(2, 12) = 0.0902, p = 0.9144$). In line with the argumentation from Schmidt and Hunter (2015) regarding a systematic underestimation, we decided to merge the different measures.

Variable Partition

We wanted to take an empirical look at the different conceptions of conflicts. First, we performed a subgroup analysis and tested all forms of work-nonwork-conflict, including work-family-conflict, against all forms of nonwork-work-conflict, including family-work-conflict. As shown in Table 1 no effects differing from zero could be found in the subgroups (WNC 95% CI [-0.174, 0.090]; NWC CI [-0.164, 0.217]). The moderator test was not significant with $F(2, 40) = 0.2468, p = 0.7825$.

In the next step we tested if the WFC and FWC constructs which focus only on the family are empirically differential from the constructs using a broader approach, such as work-home, work-nonwork or work-life conflict, which were summed up under “work-*-conflict” and “*-work-conflict” for the analysis. Heterogeneity was further reduced. The moderator test was not significant with $F(4, 38) = 0.3533, p = 0.8401$. Despite a possible

decrease of heterogeneity, the low frequency of moderating variables did not allow us to test WFC and FWC separately from the other constructs.

Table 1

Meta-analytical Results for Main Effect Analysis and Variable Partition

Variable	<i>k</i>	<i>n</i>	Mean <i>r</i>	Estimated ρ	95% CI	<i>Q</i>	<i>I</i> ²
All outcomes	43	73,647	-0.021	-0.023	-0.131 to 0.086	555.08***	90.59
2-Variable-Partition							
Work-Nonwork-Conflict	28	53,110	-0.039	-0.042	-0.174 to 0.090	434.22***	91.24
Nonwork-Work-Conflict	14	20,437	0.025	0.027	-0.164 to 0.217	58.46***	54.39
4-Variable-Partition							
Work-Family-Conflict	16	22,852	0.017	0.019	-0.147 to 0.184	183.62***	84.31
Family-Work-Conflict	10	19,376	0.029	0.031	-0.163 to 0.225	41.97***	50.03
Work-*-Conflict	12	30,258	-0.081	-0.088	-0.273 to 0.098	119.79***	76.81
-Work-Conflict	4	1,061	-0.051	-0.058	-0.259 to 0.143	10.63	51.36

Note. *K* = number of samples; *n* = total sample size; *r* = sample-size-weighted mean

observed correlation; ρ = mean true score correlation; 95% *CI* = 95% confidence interval; *Q*

= test for homogeneity; *I*² = percent of true heterogeneity;

p* < .05, *p* < .01, ****p* < .001.

Work-Nonwork-Conflict

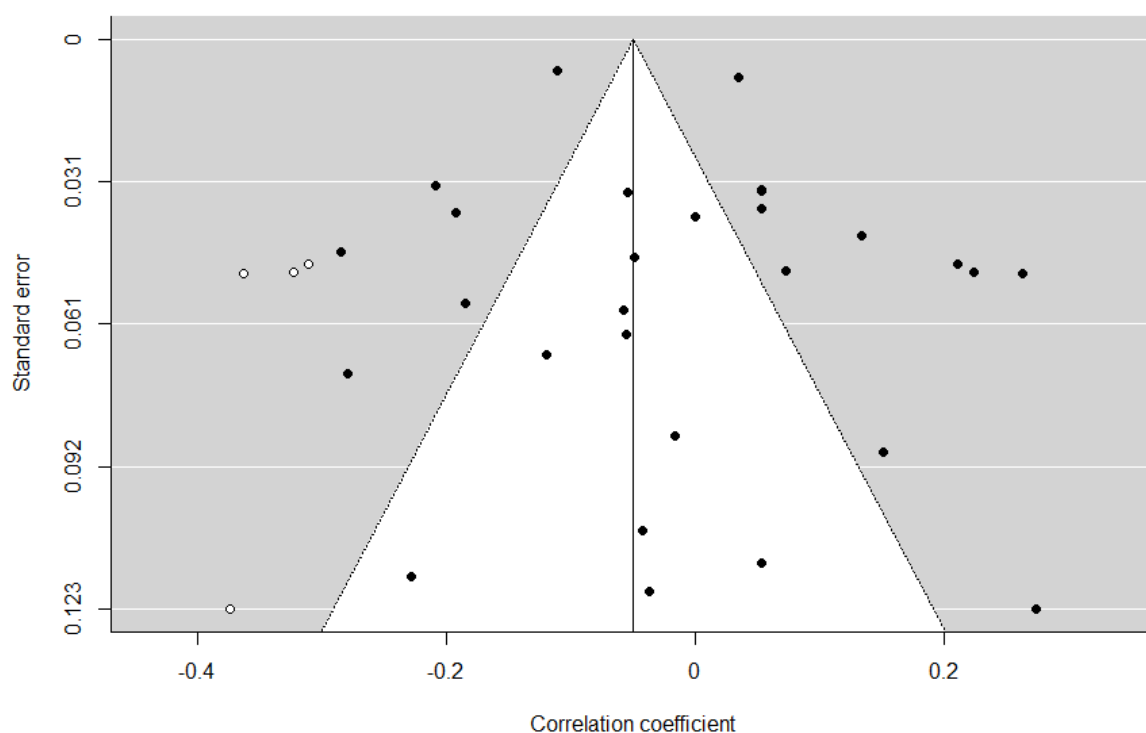
Distribution of Effect Sizes

In the subgroup WNC, out of the 28 effect sizes 15 were in the intended negative direction, while 12 showed a positive relation. To show the distribution of effect sizes and to

reveal a possible publication bias, a funnel plot analysis was performed. For the sample of studies regarding the work-nonwork-conflict, it was estimated that 4 studies were missing on the left side ($SE = 3.514$). Missing studies are filled with a trim-and-fill-procedure (Duval & Tweedie, 2000). The imputed studies were not used in the following analysis. As seen in Figure 2, out of 28 effect sizes in the WNC-setting, only 11 were included in the confidence interval.

Figure 2

Funnel plot for Work-Nonwork-Conflict Subgroup



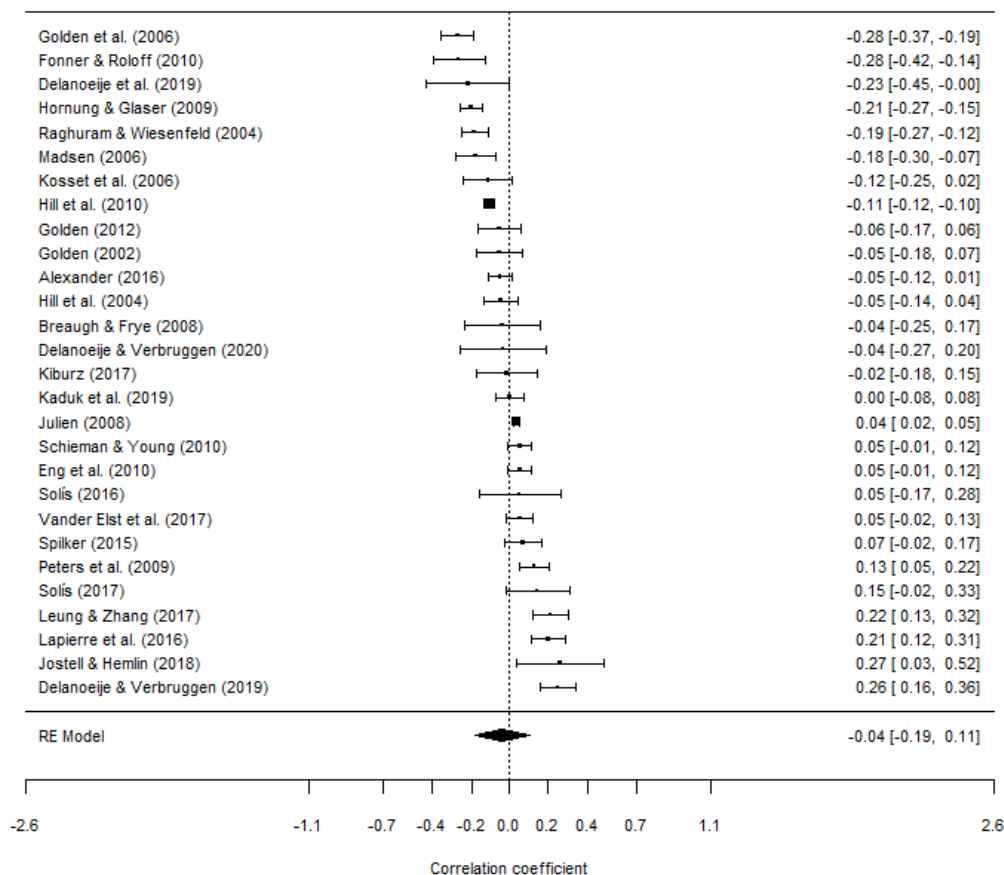
Note. Black dots correspondent to studies included in our analysis. White dots are estimated missing studies resulting from the Trim and Fill procedure. The vertical line represents the estimated effect size (ρ) in the random-effects model of all studies.

Main Effect (Hypothesis 1a)

In our first Hypothesis (1a) we proposed a negative relationship between telework and WNC. An estimated correlation of $\rho = -0.042$ (95% CI [-0.174, 0.09]) does not support this hypothesis. While the direction of the effect is as proposed, the size of the effect is too small and the confidence interval does include zero. Further investigations of possibly moderating study characteristics such as age ($F(2, 18) = 0.5906, p = 0.5644$), year ($F(2, 26) = 0.8782, p = 0.4275$) or location ($F(3, 25) = 0.4067, p = 0.7495$) did not yield significant results as every confidence interval includes the zero. The forest plot in Figure 3 visualizes the inconclusive results.

Figure 3

Forest plot for the main effect within Work-Nonwork-Conflict subgroup



Note. Dots in the plot and numbers on the right indicate the corrected correlation coefficient in the studies with its 95% confidence intervals. The last entry represents the random-effects-model estimate for the correlation coefficient (ρ) over all studies with its confidence interval.

Sensitivity Analysis

Regarding the huge differences in sample sizes, we performed a rather small sensitivity analysis. Cumulative forest plots were used to check the influence of single studies on the overall effect. While in one plot all studies were included, the other one was performed without studies with a sample size larger than 10,000. These plots are included in the appendix. The cumulative forest plot did not indicate a systematic bias of larger studies. When excluding the large studies, the cumulative analysis was even closer to a zero correlation.

Moderators (Hypothesis 2a and 3a)

We proposed that demands (e.g. work hours, amount of children) would moderate the relationship between telecommuting and WNC. Specifically, when demands are high, (a) the correlation between telework and WNC will increase. Our meta-analytic findings do not support this idea as there was no significant difference between studies labeled high and studies labeled low in amount of children ($F(2, 10) = 0.5452, p = 0.5960$). A similar result shows the comparison of studies with a higher work time and a lower work time as no differences could be found ($F(2, 6) = 1.0696, p = 0.4006$).

We further proposed that resources (e.g. flextime, boundary management) would moderate the relationship between telecommuting and WNC. Specifically, when resources

are high, (a) the correlation between telework and WNC will decrease. Our findings do not support this idea as no significant difference between studies with a high amount of flextime and those with a low amount of flextime could be found ($F(2, 6) = 0.7379, p = 0.5170$).

Moderator analysis for integration or segmentation strategies of boundary management also yielded non significant findings ($F(2, 4) = 6.6820, p = 0.0531$). Further differences in support were not significant ($F(2, 2) = 1.5119, p = 0.3981$). However for studies with a sample that used integration strategies in boundary management we found an estimated $\rho = 0.153$ and a confidence interval that did not include zero (95% CI [0.022, 0.284]). All characteristics of the random-effect models of the subgroups can be found in Table 2.

Table 2

Meta-Analytical Results for Work-Nonwork-Conflict Subgroup with Moderator Analysis

Variable	<i>k</i>	<i>n</i>	Mean <i>r</i>	Estimated P	95% CI	<i>Q</i>	<i>I</i> ²
All outcomes (WNC)	28	53,110	-0.039	-0.042	-0.174 to 0.090	434.22***	91.24
Study Characteristics							
Year							
2001-2010	13	47,386	-0.049	-0.053	-0.203 to 0.098	165.53***	59.40
2011-2020	15	5,724	0.043	0.048	-0.040 to 0.135	268.08***	93.61
Location							
North America	15	23,870	0.009	0.009	-0.158 to 0.176	122.93***	79.86
Europe	8	3,745	0.030	0.037	-0.084 to 0.158	108.17***	91.96
Other	5	25,495	-0.094	0.112	-0.331 to 0.129	53.82***	48.73
Age							
Higher	10	3,911	-0.054	0.057	-0.183 to 0.069	121.07***	91.29
Lower	10	45,834	-0.042	-0.046	-0.232 to 0.141	258.08***	94.20
Moderators							
Support							
Lower	2	1,545	0.093	0.099	-0.162 to 0.361	7.31**	69.47
Higher	2	974	0.041	0.045	-0.274 to 0.364	0.78	0.00
Amount Children							
Lower	6	27,731	-0.093	-0.100	-0.317 to 0.117	49.49***	66.12
Higher	6	1,344	0.013	0.013	-0.152 to 0.178	46.75***	86.34
Boundary Management							
Integration	3	949	0.144	0.153	0.022 to 0.284	4.98	35.84

Segment.	3	1,372	-0.070	-0.076	-0.199 to 0.048	2.56	0.00
Total Worktime							
Lower	4	2,125	0.000	-0.000	-0.159 to 0.158	18.45**	76.04
Higher	4	24,965	-0.099	-0.107	-0.286 to 0.072	18.94**	17.83
Flexitime							
Lower	4	26,107	-0.099	-0.107	-0.321 to 0.108	4.76	2.97
Higher	4	1,848	-0.003	0.005	-0.179 to 0.188	49.89***	91.57

Note. K = number of samples; n = total sample size; r = sample-size-weighted mean

observed correlation; ρ = mean true score correlation; 95% CI = 95% confidence interval; Q

= test for homogeneity; I^2 = percent of true heterogeneity; The results of the moderator analyses were reported for categorical variables with at least two studies.

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

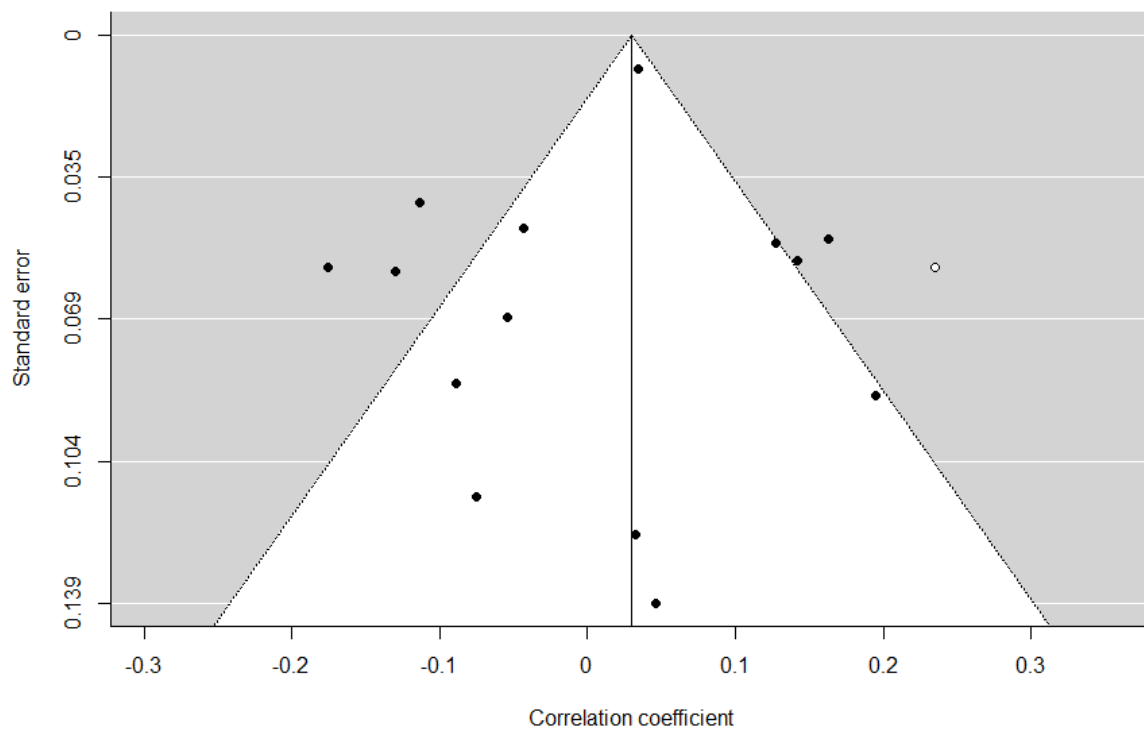
Nonwork-Work-Conflict

Distribution of Effect Sizes

In the subgroup NWC, out of the 14 effect sizes found, seven were in the intended negative direction, while seven showed a positive relation. Another funnel plot was conducted for the effect sizes of the nonwork-work-conflict. As seen in Figure 4 it was estimated that one study was missing on the right side ($SE = 2.530$). Missing studies are filled with a trim-and-fill-procedure (Duval & Tweedie, 2000). Again, the imputed studies were not used in the following analysis. Out of 14 effect sizes in the NWC-setting, nine were included in the confidence interval.

Figure 4

Funnel plot for Nonwork-Work-Conflict Subgroup



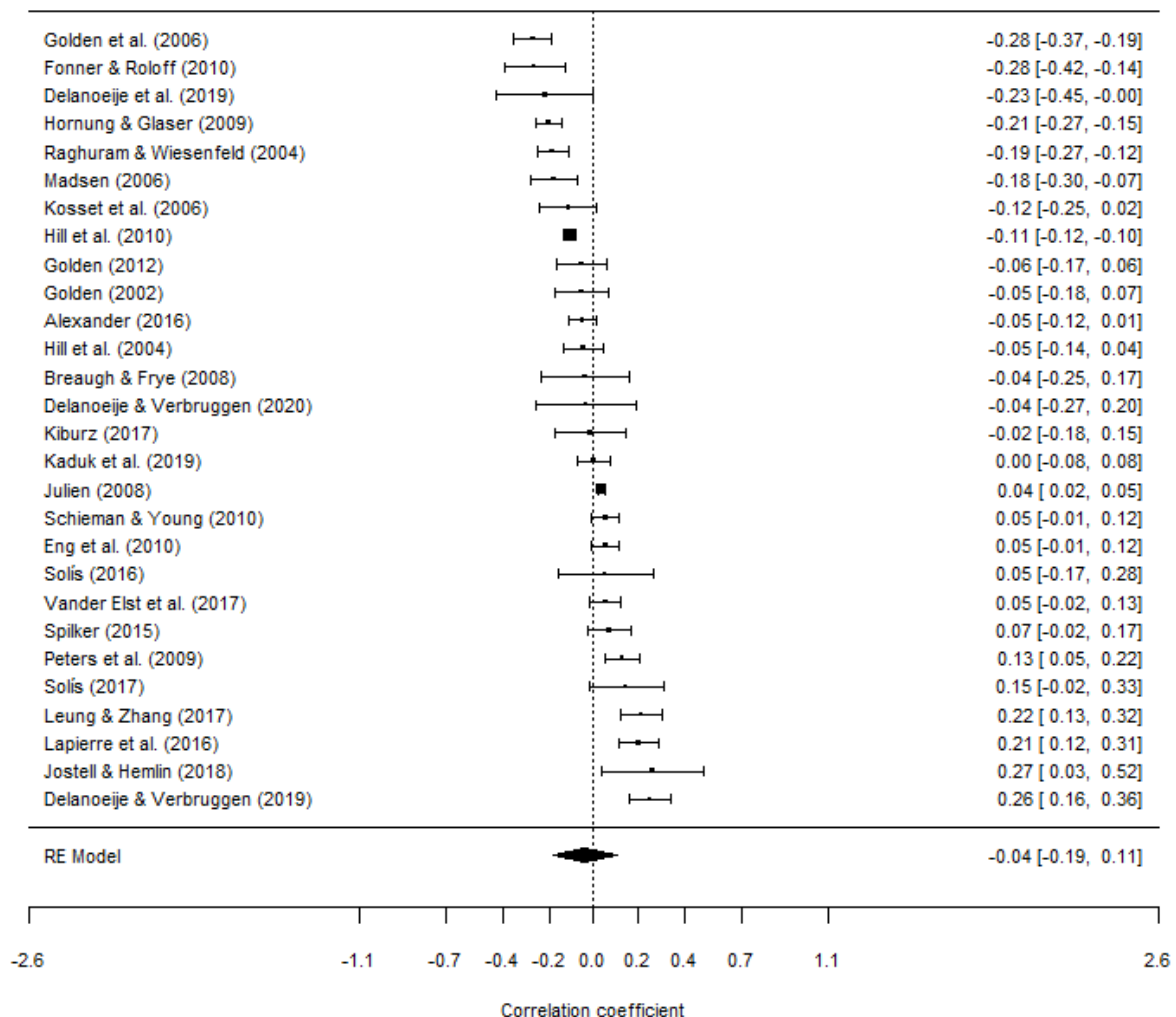
Note. Black dots correspondent to studies included in our analysis. White dots are estimated missing studies resulting from the Trim and Fill procedure. The vertical line represents the estimated effect size (ρ) in the random-effects model of all studies.

Main Effect (Hypothesis 1b)

In our first Hypothesis (1b) we also proposed a negative relationship between telework and NWC. An estimated correlation of $\rho = -0.027$ (95% CI [-0.164, 0.217]) does not support this hypothesis. While the direction is as proposed the size of the effect is too small and the confidence interval includes zero. Further investigation of possibly moderating study characteristics such as age ($F(2, 8) = 0.1552, p = 0.8588$), year ($F(2, 12) = 0.1251, p = 0.8835$) or location ($F(3, 11) = 0.5911, p = 0.6336$) did not yield significant results. Figure 5 visualizes the inconclusive results.

Figure 5

Forest plot for the main effect within Nonwork-Work-Conflict subgroup



Note. Dots in the plot and numbers on the right indicate the corrected correlation coefficient in the studies with its 95% confidence intervals. The last entry represents the random-effects-model estimate for the correlation coefficient (ρ) over all studies with its confidence interval.

Sensitivity Analysis

Following the same procedure as before we used cumulative forest plots to check the influence of single studies. These plots are shown in the appendix. For NWC the same pattern

was found - without the influence of the large studies, the cumulative analysis was even closer to a zero correlation.

Moderators (Hypothesis 2b and 3b)

We proposed that demands would moderate the relationship between telecommuting and NWC. Specifically, when demands are high, (b) the correlation between telework and WNC will increase. Our meta-analytic findings do not support this idea as there was no significant difference between studies labeled as low or high in demands. Both work hours ($F(2, 2) = 0.3954, p = 0.7166$) and amount of children ($F(2, 6) = 1.5042, p = 0.2955$) did not show statistical significance, as is illustrated in Table 3.

We further proposed that resources would moderate the relationship between telecommuting and NWC. Specifically, when resources are high, (b) the correlation between telework and WNC will decrease. The number of studies that reported both flextime and NWC in sufficient quality and quantity was not high enough to include this moderator in our analysis. This problem also arose with boundary management as only 1 study from the integration strategy and only 2 studies from the segmentation strategy were available to be tested ($F(2, 1) = 71.5443, p = 0.0833$). Due to validity reasons, this analysis is not included in Table 3. Therefore no decision regarding hypothesis 3b could be made.

Table 3

Meta-Analytical Results for Nonwork-Work-Conflict Subgroup with Moderator Analysis

Variable	<i>k</i>	<i>n</i>	Mean <i>r</i>	Estimated P	95% CI	<i>Q</i>	<i>I</i> ²
All outcomes (NWC)	14	20,437	0.025	0.027	-0.164 to 0.217	58.46***	54.39
Study Characteristics							
Year							

2001-2010	5	18,350	0.026	0.028	-0.127 to 0.183	23.57***	47.56
2011-2020	9	2,087	0.011	0.015	-0.091 to 0.121	34.19***	72.70
Location							
North America	7	18,845	0.023	0.024	-0.123 to 0.171	32.81***	50.52
Europe	3	533	0.103	0.113	-0.092 to 0.317	0.94	0.00
Other	4	1,059	0.020	0.028	-0.123 to 0.179	21.07***	79.24
Age							
Lower	7	2,231	-0.013	-0.014	-0.133 to 0.105	35.92***	79.33
Higher	3	16,579	0.033	0.036	-0.133 to 0.205	3.29	0.35
Moderators							
Amount Children							
Lower	4	1,726	-0.046	-0.052	-0.189 to 0.085	16.49**	74.70
Higher	4	619	-0.099	-0.102	-0.272 to 0.068	4.06	1.13
Total Worktime							
Lower	2	589	-0.091	-0.098	-0.650 to 0.453	0.72	0.00
Higher	2	458	-0.062	-0.061	-0.646 to 0.524	12.51**	81.3

Note. K = number of samples; n = total sample size; r = sample-size-weighted mean

observed correlation; ρ = mean true score correlation; 95% CI = 95% confidence interval; Q

= test for homogeneity; I^2 = percent of true heterogeneity;

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

Discussion

Statement of Major Findings

In our meta-analytic research we investigated the relationship between telework and the conflict that arises between the work and nonwork domain. Further we checked for the moderating role of certain resources (flextime, boundary management, and support) as well as demands (work hours and amount of children). Consistent with previous meta-analytic findings, there was no clear evidence for neither positive nor negative effects of telework on different conflict directions.

While on a meta-analytical level there was no effect in total, significant effects can be found in primary studies, for both positive and negative directions. The primary studies showed small correlations which were not larger than 0.27 in any direction. At this point, one could argue that differences occur due to methodological reasons only and are not relevant for practice. However small correlations are not surprising, as the construct of conflicting domains is very broad making it plausible that other influences play a more important role. Therefore, seemingly small correlations can still have a considerable impact for teleworkers. Because of that, the differences between evidence on study-level and meta-analytic-level will be discussed.

We assumed that moderators play an important role explaining when telecommuting can work. Unfortunately, our investigation of moderators could not yield evidence explaining the divergent results in the primary studies. The only moderating variable that provided some insight was the boundary management subgroup, which was found to have a positive confidence interval not including zero. Also, this was one of the only psychological variables where reporting in primary studies was barely sufficient. The findings regarding boundary management support the idea that integration focused boundary management is something employees should avoid as it could heighten WNC. But the boundary management subgroups only consisted of three effect sizes each with no significant differences between each other ($p = 0.0531$). Therefore caution is advised when drawing conclusions from this result.

Taken together, there seems to be no evidence for the hypotheses we proposed in this meta-analysis. But it would be a careless interpretation that telework does not have an effect on the employees, as the results in the primary studies and the meta-analytic results are contradicting. In the following these findings will be explained and discussed.

Consideration of (Alternative) Explanations

We would like to point out possible explanations for the contradicting evidence emerging from the results of the primary studies and the overall found null effect. In general, significant effects in the primary studies encourage the viewpoint that telework can make a difference for individual employees. However, our analysis was not able to uncover direct effects between the investigated variables, which leaves two possibilities: Either these results emerge because no effect exists or because an effect is masked by others.

Moderators and Variables

One explanation for the found null effect might be that it is more important to know *how* telework is conducted than *if* telework is conducted. In the light of our research this implies that while telework can make a noticeable difference for individuals, these effects differ with individual circumstances. This insight might prove crucial to reconcile our findings with the inconclusive literature and the opposing effects found in primary studies. Arising thereby is a need for an examination of the surrounding work environment and moderators. Building on the importance of this question we already highlighted the possible role of moderating variables in the teleworking context.

As we consider showing the fragmented field of research on telework to be one of the central points in this paper, in Table 5 some examples for variables are reported which could not be included in the analysis due to their low quantity. This table does not aim for completeness, but tries to give inspiration for future research.

Table 5

Overview over additional moderators that could not be assigned in our analysis

Cluster	Moderator	Studies
Organizational	team member exchange quality	Golden (2006)
	leader member exchange quality	Spilker (2014)
		Golden (2006)
	Connectedness	Raghuram (2004)
	Trust	Raghuram (2004)
	access to information	Kiburz (2016)
	interaction with supervisor	Lapierre et al. (2016)
		Kiburz (2016)
	engagement in decision making	Vander Elst et al. (2017)
	information exchange frequency	Fonner & Roloff (2010)
	information exchange quality	Fonner & Roloff (2010)
Skills/Experiences	virtual work experience	Alexander (2014)
		Raghuram (2004)
	education level	Peters et al. (2009)
		Allen et al. (2017)
		Spilker (2014)
		Nijp et al. (2014)
	Knowledge	Kiburz (2016)
	Tenure	Veiga et al. (2006)
		Alexander (2014)
		Hemlin (2018)
		Golden (2012)
		Lapierre & Allen (2006)
		Allen et al. (2017)
		Spilker (2014)
Psychological, emotional	career optimism	Hill et al. (2003)
	need for affiliation	Spilker (2014)
	emotional exhaustion	Kaduk et al. (2019)
		Vander Elst et al. (2017)
	health status	Madsen (2006)
		Nijp et al. (2014)
	job stress	Raghuram (2004)
		Kaduk et al. (2019)
		Delanoeijea & Verbruggen (2020)
		Kim et al. (2014)

	personal stress	Nijp et al. (2014) Hill et al. (2003) Kaduk et al. (2019)
Psychological, Motivational	Motivation	Kiburz (2016) Hill et al. (2003)
	work ethic	Alexander (2014)
	Voluntariness	Spilker (2014)
	work exhaustion	Golden (2012)
	work engagement	Delanoeije & Verbruggen (2020) Vander Elst et al. (2017)
	Connectedness	Raghuram (2004) Hill et al. (2003)
	job commitment	Hill et al. (2003)
Other, psychological	work-family balance self-efficacy	Lapierre et al. (2016)
	self-efficacy	Raghuram (2004)
	structuring behaviour	Raghuram (2004)
	proactive personality	Kiburz (2016)
	depression	Kossek et al. (2006)

We would like to draw attention to the fact that the most frequently measured variables like age or gender are often of demographic nature, while variables with value for psychological insights and models are rare within primary studies. From a practical point of view, looking at mainly unchangeable variables seems to have no benefit when aiming for practical advice on how to employ telework initiatives. The aforementioned lack of psychological variables other than gender, income or age in this field of research is even more concerning when considering the only minor influence these variables have on measures like WFC (Byron, 2005). The validity of these demographic variables is further eroded by a lack of uniformity regarding their measurements.

Confoundation of Flextime and Flexplace Measures

While the previous reasoning argues that additional moderators could yield effects

that are hidden, one could also argue that the results from the primary studies only emerge due to confoundation problems with the telework construct. One possibility is indeed that flexible work arrangements often are a combination of flexible place and flexible time, while we only focused on an approach centered around the flexplace construct. It is possible that in many studies flexplace arrangements contained some amount of flextime or other components, which in turn could yield significant results. Since testing flextime as a moderator resulted in negative results, this explanation does not seem likely to us. But a lot of studies did not report flextime, making it possible for flextime to have an effect that could not be tested adequately.

Broader Scope of Review

A broader spectrum of dependent variables was included with the aim of finding and analyzing additional primary studies that used different concepts in research. The decision of broadening the construct for this analysis seems counterintuitive when hoping to clear up the inconclusive results of the past as broadening any concept means risking additional heterogeneity. Nevertheless it was a necessary step towards a general understanding of this fragmented field of research, adding another analysis layer to the current meta-analytical evidence. This is, that results could depend on the question which domain conflicts are in the center of investigation. These studies were intended to yield differences in conflict constructs, showing a possible methodological explanation for the observed inconclusive outcomes from previous findings. But it became apparent that these different dependent variables only explain a small part of the present heterogeneity. The null effects can not be attributed to this broadening of the NWC/WNC construct, as the subgroups of WFC and FWC show just the same amount of difference between studies as the other used constructs. This contradicts the idea of an effect being masked through methodological differences in those constructs, which

could not be confirmed.

Curvilinear Relations

Trying to explain the controversial results of the field, past authors have proposed that there is a curvilinear relation between the amount of telework and other measures (e.g. Hoornweg et al., 2016 or Virick et al., 2010). Potentially, this could also be true for different forms of domain conflicts. Meaning that there would be a certain amount of telework that should not be exceeded in order to reduce the conflict most efficiently. From this perspective, the null results could be explained, but this assumption could not be tested within a linear modeling approach.

Summary of Alternative Explanations

Summed up, it is plausible that rather small effects of telework are masked on a meta-analytical level by the effect of important moderators, which were not investigated yet. This is by far not the only explanation that must be targeted by future research, both a curvilinear relation between telework and NWC/WNC and the often confounded constructs of flextime and flexplace are possible explanations that need to be examined. In general, scientists must also be aware of confounded variables due to a broad range of constructs in this field.

Generalizability of Conclusions

Relevant Populations

There is no reason within the given data to expect a bias regarding the sampling of the demographic variables across the included studies. Three studies included no information about their type of selection process. 22 studies gave information, but made no effort towards demographic representativeness with their selection process. Three studies made an effort to

construct their sample representative of the target population. Within these variables, there were no unusual sample characteristics, especially given the fact that demographic variables only played a minor role in previous research. However, this does not mean that results can be generalized to all situations and all teleworkers, because interindividual differences in psychological variables still might play a decisive role. Specifically, the results should not be interpreted in a sense that telework has the same impact on all employees, as this study can only show general trends.

Treatment Variations

As mentioned above, while we considered the main aspect for defining telework being the flexibility in place of work, there are numerous further work arrangements including other flexibilities (eg. flextime, flex leave) that are possibly present in the telework situation and differ across the varying jobs. While some teleworkers have to be accessible for eight hours straight, others might be able to not only work from home but also whenever it is convenient for them. This clearly shows that telework is not necessarily the same across all employees. Results therefore should not be interpreted as representing all forms of telework, but as average results for the work conditions within the primary studies.

Dependent Variables

Our analysis shows that the relationship between telework and WNC is not as easily defined as one might think when looking at the single studies. We want to emphasize that the measure of the dependent variable did differ in many ways, as can be seen the variety of scales in Table A1, representing a fragmented field of research. Within the primary studies we found that different operationalizations might differ not only systematically with the domains under investigation but also unsystematically as researchers use different terms for

the same construct or similar items to capture different types of constructs. Because there were no effects found for any of the subgroup analysis, we assume that the constructs share a common base or at least are not completely different from another, but this result should not be interpreted as if a result for one variable can be generalized to another. It is also possible that they are completely independent and by chance share a zero effect.

Research Designs

In this study, Pearson correlations as well as Point-biserial correlations were considered. While the Point-biserial correlation (corresponding to a quasi-experimental design) is better suited to answer the question of what exactly telework changes when it is employed, the other correlation is rather used to track the relation between the amount of telework and conflicts. We decided that the differences between both were not insurmountable, so they would be merged. On the grounds of the subsample analysis not yielding any differences we argue that this was possible, or at worst a conservative estimate (Schmidt & Hunter, 2015).

General Limitations

First of all, the most obvious limitation to this study is that only correlational data is used and therefore no causal attributions can be made.

Secondly, a meta analysis is always limited to the quality and quantity of primary studies. For our analysis this was especially true for the amount of the theoretically moderators that could be extracted from the primary studies. Because there was only lacking information about the actual telework situation, we had to focus on the given means. This led to assignment of the moderators being based on the means of the studies, with the risk of mixing different scales. Also the minimal amount of studies for a subgroup analysis ($k=5$)

was almost never reached, further limiting our scope. Regarding the independent variable: when reported, telework was mostly captured using self-report measures missing information about reliability. We estimated these missing reliabilities to be perfect which is unlikely due to perceptions being subjective.

Another limitation to our study was not including the construct work-life-conflict in our database search. This was due to an earlier decision not to include constructs similar to work-life-balance. This decision was made for the reason that work-life balance does not consider the directionality of the conflict - we see this as a failure to recognise the distinct differences in the demands made by the work or nonwork domain. In the process of excluding work-life-balance as a dependent variable from our search strategy we failed to consider work-life-conflict as a possible dependent variable.

Implications and Interpretation for Theory, Policy or Practice

The inconclusive result might not hint at no effect of telework but rather an effect where the underlying mechanisms have yet to be identified. Therefore it seems unreasonable to discourage telework as family-friendly policy, as some primary studies show its possible positive effects. This further emphasizes the necessity to further evaluate which mechanisms drive those effects. As mentioned above, it is important that scientists develop a multi-dimensional theoretical view on this topic, including psychological variables. These could contain a variety of constructs, like emotions, motivation or behavioural dispositions, but also related work characteristics. We propose a viewpoint of telework being a construct better suited for observations on the individual level than on the group level.

The best recommendation that can be drawn from these findings from an organizational viewpoint might be to develop telework conditions that are fine-grained and

suited to specific employees, as the conditions of telework could matter most in this case.

A regular evaluation to monitor if telework does cause facilitations or problems in specific situations also seems appropriate.

Guidelines for Future Research

While the practical implications of this study are quite limited, the problems and theoretical approaches discussed may benefit future research. Throughout this discussion it should have become apparent that there is a need for research investigating psychological (emotional, motivational, cognitive, social) moderators on the individual level and their influence on how telework is done. Without this research critical information regarding the relation between NWC/WNC and telework are missing, making it difficult to construct a suitable theoretical framework. It is necessary to properly report the many factors present in the work environment, including social factors as well as conditions of flexibility - which is best done with multidimensional scales. Since research in this field should aim to provide practical implications, future investigations concerning moderators should target changeable variables.

One problem in this setting was that it was not possible to distinguish between resources/demands that were already part of the work arrangement before the introduction of telework and those which are specifically added. Even though we tried to find antecedents of good telework, we can not tell exactly if these were subject to change or not. This is in line with the fact that this kind of study can only include situational, cross-sectional views on this topic. Results can therefore only give an idea about what factors could matter in this setting without estimating a development over time. Since we propose changing demands and resources due to telework in our theoretical approach, longitudinal studies would be needed

to test if the newly available resources through telework reduce WNC and NWC or if general work characteristics play a more important role. To capture the isolated effect of telework, the extent of WNC and NWC as well as selected resources and demands have to be measured beforehand and compared with at least one follow-up measure. Quality could improve if telework is assigned randomly. This could be accomplished by using populations from companies in the process of introducing telework. One upside of this approach is that the program itself is evaluated at the same time.

In a first step, qualitative studies could give some more insight about what topics are relevant for teleworkers.

In regard to their impact on teleworkers there was no evidence for a separation of the different constructs. This raises the question how much the multitude of proposed constructs have in common. Maybe it is possible to integrate different conflict forms to more uniform terms when looking at telework. For this, we propose to use the Work-Nonwork-Conflict (Nonwork-Work-Conflict), as it is more generalizable and can also be applied to people without children or other family members in the same household.

In summary, to answer the questions emerging from this diverse field of research there is a desperate need for primary studies targeting different groups of variables. While obtaining information on top-level variables is convenient and obtaining psychological variables in depth might prove hard, it can be illuminating to extract information about the workplace and task as an intermediate level. Acquisition of those could target a more personal layer of variables, which has been neglected in past research.

References

Studies marked with an asterisk were included in the quantitative analysis.

- * Alexander, A. L. (2014). Telework's impact on employee effectiveness: Is it the time or the place that really matters? *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 76(7-B), No Pagination Specified.
- Allen, T. D., Johnson, R. C., Kiburz, K. M., & Shockley, K. M. (2013). Work–family conflict and flexible work arrangements: Deconstructing flexibility. *Personnel psychology*, 66(2), 345–376. <https://doi.org/10.1111/peps.12012>
- Bailey, D. E., & Kurland, N. B. (2002). A review of telework research: Findings, new directions and lessons for the study of modern work. *Journal of Organizational Behavior*, 23(SpecIssue), 383–400. <https://doi.org/10.1002/job.144>
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Basile, K. A., & Beauregard, T. A. (2016). Strategies for successful telework: how effective employees manage work/home boundaries. *Strategic HR Review*, 15(3), 106–111. <https://doi.org/10.1108/SHR-03-2016-0024>
- Bohen, H.H., & Viveros-Long, A. (1981). *Balancing jobs and family life : do flexible work schedules help?* Philadelphia: Temple University Press.

- * Breugh, J. A., & Frye, N. K. (2008). Work–Family Conflict: The Importance of Family-Friendly Employment Practices and Family-Supportive Supervisors. *Journal of Business and Psychology*, 22(4), 345–353. <https://doi.org/10.1007/s10869-008-9081-1>

- Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*, 67(2), 169–198. <https://doi.org/10.1016/j.jvb.2004.08.009>

- Carlson, D. S., Kacmar, K., & Williams, L. J. (2000). Construction and Initial Validation of a Multidimensional Measure of Work–Family Conflict. *Journal of Vocational Behavior*, 56(2), 249–276. <https://doi.org/10.1006/jvbe.1999.1713>

- Carlson, D. S., & Perrewé, P. L. (1999). The Role of Social Support in the Stressor-Strain Relationship: An Examination of Work-Family Conflict. *Journal of Management*, 25(4), 513–540. <https://doi.org/10.1177/014920639902500403>

- * Delanoeije, J., & Verbruggen, M. (2019). The Use of Work-Home Practices and Work-Home Conflict: Examining the Role of Volition and Perceived Pressure in a Multi-Method Study. *Frontiers in Psychology*, 10, 2362. <https://doi.org/10.3389/fpsyg.2019.02362>

- * Delanoeije, J., & Verbruggen, M. (2020). Between-person and within-person effects of telework: A quasi-field experiment. *European Journal of Work and Organizational Psychology*, No Pagination Specified. <https://doi.org/10.1080/1359432X.2020.1774557>

- * Delanoeije, J., Verbruggen, M., & Germeys, L. (2019). Boundary role transitions: A day-to-day approach to explain the effects of home-based telework on work-to-home conflict and home-to-work conflict. *Human Relations*, 72(12), 1843–1868. <https://doi.org/10.1177/0018726718823071>

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *The Journal of Applied Psychology*, 86(3), 499–512.

<https://doi.org/10.1037/0021-9010.86.3.499>

* Desrochers, S., Hilton, J. M., & Larwood, L. (2005). Preliminary Validation of the Work-Family Integration-Blurring Scale. *Journal of Family Issues*, 26(4), 442–466.

<https://doi.org/10.1177/0192513X04272438>

Dilworth, J. E. L. (2004). Predictors of Negative Spillover from Family to Work. *Journal of Family Issues*, 25(2), 241–261. <https://doi.org/10.1177/0192513X03257406>

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, 56(2), 455–463.

<https://doi.org/10.1111/j.0006-341x.2000.00455.x>

* Eng, W., Moore, S., Grunberg, L., Greenberg, E., & Sikora, P. (2010). What Influences Work-Family Conflict? The Function of Work Support and Working from Home. *Current Psychology*, 29(2), 104–120. <https://doi.org/10.1007/s12144-010-9075-9>

Fisher, G. G., Bulger, C. A., & Smith, C. S. (2009). Beyond work and family: A measure of work/nonwork interference and enhancement. *Journal of Occupational Health Psychology*, 14(4), 441–456. <https://doi.org/10.1037/a0016737>

* Fonner, K. L., & Roloff, M. E. (2010). Why teleworkers are more satisfied with their jobs than are office-based workers: When less contact is beneficial. *Journal of Applied Communication Research*, 38(4), 336–361.

<https://doi.org/10.1080/00909882.2010.513998>

- Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-family conflict: A model of the work-family interface. *Journal of Applied Psychology*, (77), 65–78. <https://doi.org/10.1037/0021-9010.77.1.65>
- Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *The Journal of Applied Psychology*, 92(6), 1524–1541. <https://doi.org/10.1037/0021-9010.92.6.1524>
- Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dijkers, J. S. E., van Hooff, M. L. M., & Kinnunen, U. M. (2005). Work-home interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. *Work & Stress*, 19(4), 319–339. <https://doi.org/10.1080/02678370500410208>
- * Golden, T. D. (2006). The role of relationships in understanding telecommuter satisfaction. *Journal of Organizational Behavior*, 27(3), 319–340. <https://doi.org/10.1002/job.369>
- * Golden, T. D. (2012). Altering the Effects of Work and Family Conflict on Exhaustion: Telework During Traditional and Nontraditional Work Hours. *Journal of Business and Psychology*, 27(3), 255–269. <https://doi.org/10.1007/s10869-011-9247-0>
- * Golden, T. D., Veiga, J. F., & Simsek, Z. (2006). Telecommuting's differential impact on work-family conflict: Is there no place like home? *The Journal of Applied Psychology*, 91(6), 1340–1350. <https://doi.org/10.1037/0021-9010.91.6.1340>

Gutek, B. A., Searle, S., & Klepa, L. (1991). Rational versus gender role explanations for work-family conflict. *The Journal of Applied Psychology*, 76(4), 560–568.

<https://doi.org/10.1037/0021-9010.76.4.560>

- * Hill, E. J., Erickson, J. J., Holmes, E. K., & Ferris, M. (2010). Workplace flexibility, work hours, and work-life conflict: Finding an extra day or two. *Journal of Family Psychology : JFP : Journal of the Division of Family Psychology of the American Psychological Association (Division 43)*, 24(3), 349–358. <https://doi.org/10.1037/a0019282>

Hill, E. J., Ferris, M., & Mårtinson, V. (2003). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life. *Journal of Vocational Behavior*, 63(2), 220–241.

- * Hill, E. J., Martinson, V., & Ferris, M. (2004). New-concept part-time employment as a work-family adaptive strategy for women professionals with small children. *Family Relations: An Interdisciplinary Journal of Applied Family Studies*, 53(3), 282–292. <https://doi.org/10.1111/j.0022-2445.2004.0004.x>

Hoornweg, N., Peters, P., & van der Heijden, B. (2016). Finding the Optimal Mix between Telework and Office Hours to Enhance Employee Productivity: A Study into the Relationship between Telework Intensity and Individual Productivity, with Mediation of Intrinsic Motivation and Moderation of Office Hours. In J. de Leede (Ed.), *Advanced Series in Management. New Ways of Working Practices* (Vol. 16, pp. 1–28). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1877-636120160000016002>

- * Hornung, S., & Glaser, J. (2009). Home-based telecommuting and quality of life: Further evidence on an employee-oriented human resource practice. *Psychological Reports*, 104(2), 395–402. <https://doi.org/10.2466/PRO.104.2.395-402>

- * Jostell, D., & Hemlin, S. (2018). After hours teleworking and boundary management: Effects on work-family conflict. *Work: Journal of Prevention, Assessment & Rehabilitation*, 60(3), 475–483. <https://doi.org/10.3233/WOR-182748>
 - * Julien, M. (2008). Finding solutions to work-life conflict: Examining models of control over work-life interface. *Dissertation Abstracts International Section a: Humanities and Social Sciences*, 68(10-A), 4378.
 - * Kaduk, A., Genadek, K., Kelly, E. L., & Moen, P. (2019). Involuntary vs. voluntary flexible work: insights for scholars and stakeholders. *Community, Work & Family*, 22(4), 412–442. <https://doi.org/10.1080/13668803.2019.1616532>
 - * Kiburz, K. M. (2016). A closer look into remote work: Examining resources within remote work arrangements with outcomes of job performance and work-family conflict. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 77(12-B), No Pagination Specified.
- Kim, J., Henly, J. R., Golden, L. M., & Lambert, S. J. (2020). Workplace Flexibility and Worker Well-Being by Gender. *Journal of Marriage and Family*, 82(3), 892-910.
DOI:10.1111/jomf.12633
- * Kossek, E. E., Lautsch, B. A., & Eaton, S. C. (2006). Telecommuting, control, and boundary management: Correlates of policy use and practice, job control, and work–family effectiveness. *Journal of Vocational Behavior*, 68(2), 347–367.
<https://doi.org/10.1016/j.jvb.2005.07.002>
- Lapierre, L. M., & Allen, T. D. (2006). Work-supportive family, family-supportive supervision, use of organizational benefits, and problem-focused coping: implications for

work-family conflict and employee well-being. *Journal of occupational health psychology*, 11(2), 169. DOI:10.1037/1076-8998.11.2.169

- * Lapierre, L. M., van Steenbergen, E. F., Peeters, M. C. W., & Kluwer, E. S. (2016).

Juggling work and family responsibilities when involuntarily working more from home: A multiwave study of financial sales professionals. *Journal of Organizational Behavior*, 37(6), 804–822. <https://doi.org/10.1002/job.2075>

- * Leung, L., & Zhang, R. (2017). Mapping ICT use at home and telecommuting practices: A perspective from work/family border theory. *Telematics and Informatics*, 34(1), 385–396.

<https://doi.org/10.1016/j.tele.2016.06.001>

- * Madsen, S. R. (2006). Work and family conflict: Can home-based teleworking make a difference? *International Journal of Organization Theory and Behaviour*, 9(3), 307–350.

Masuda, A. D., Poelmans, S. A., Allen, T. D., Spector, P. E., Lapierre, L. M., Cooper, C. L., Abarca, N., Brough, P., Ferreira, P., Fraile, G., Lu, L., Lu, C., Siu, O. L., O’Driscoll, M. P., Simoni, A.S., Shima, S., & Moreno-Velazquez, I. (2012). Flexible work arrangements availability and their relationship with work-to-family conflict, job satisfaction, and turnover intentions: A comparison of three country clusters. *Applied psychology*, 61(1), 1-29. doi: 10.1111/j.1464-0597.2011.00453.x

Mesmer-Magnus, J. R., & Viswesvaran, C. (2005). Convergence between measures of work-to-family and family-to-work conflict: A meta-analytic examination. *Journal of Vocational Behavior*, 67(2), 215–232. <https://doi.org/10.1016/j.jvb.2004.05.004>

- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. *Journal of Applied Psychology*, 81(4), 400–410. <https://doi.org/10.1037/0021-9010.81.4.400>
- Nilles, J. (1975). Telecommunications and Organizational Decentralization. *IEEE Transactions on Communications*, 23(10), 1142–1147.
<https://doi.org/10.1109/TCOM.1975.1092687>
- Nijp, H. H., Beckers, D. G., van de Voorde, K., Geurts, S. A., & Kompier, M. A. (2016). Effects of new ways of working on work hours and work location, health and job-related outcomes. *Chronobiology international*, 33(6), 604–618.
<https://doi.org/10.3109/07420528.2016.1167731>
- O’Driscoll, M. P., Ilgen, D. R., & Hildreth, K. (1992). Time Devoted to Job and Off-Job Activities, Interrole Conflict, and Affective Experiences. *Journal of Applied Psychology*, 77(3), 272–279.
- Pabilonia, S. W., & Vernon, V. (2020). Telework and time use in the United States. *Available at SSRN 3601959*.
- * Peters, P., Dulk, L. den, & van der Lippe, T. (2009). The effects of time-spatial flexibility and new working conditions on employees’ work–life balance: the Dutch case. *Community, Work & Family*, 12(3), 279–297.
<https://doi.org/10.1080/13668800902968907>
- Pyöriä, P. (2011). Managing telework: risks, fears and rules. *Management Research Review*, 34(4), 386–399. <https://doi.org/10.1108/01409171111117843>

R Core Team. (2020). *R: A Language and Environment for Statistical Computing*.

<https://www.R-project.org/>

Raghuram, S., Garud, R., Wiesenfeld, B., & Gupta, V. (2001). Factors contributing to virtual work adjustment. *Journal of Management*, 27(3), 383–405. <https://doi.org/10.1016/S0149-2063%2801%2900097-6>

* Raghuram, S., & Wiesenfeld, B. (2004). Work-nonwork conflict and job stress among virtual workers. *Human Resource Management*, 43(2-3), 259–277.

<https://doi.org/10.1002/hrm.20019>

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin*, 86(3), 638–641. <https://doi.org/10.1037/0033-2909.86.3.638>

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>

* Schieman, S., & Young, M. (2010). Is There a Downside to Schedule Control for the Work-Family Interface? *Journal of Family Issues*, 31(10), 1391–1414.

<https://doi.org/10.1177/0192513X10361866>

Schmidt, F. L., & Hunter, J. E. (2015). *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*. SAGE Publications, Ltd. <https://doi.org/10.4135/9781483398105>

Shockley, K. M., & Allen, T. D. (2007). When flexibility helps: Another look at the availability of flexible work arrangements and work-family conflict. *Journal of Vocational Behavior*, 71(3), 479–493. <https://doi.org/10.1016/j.jvb.2007.08.006>

Shockley, K. M., & Allen, T. D. (2013). Episodic work-family conflict, cardiovascular indicators, and social support: An experience sampling approach. *Journal of Occupational Health Psychology, 18*(3), 262–275. <https://doi.org/10.1037/a0033137>

* Solís, M. (2016). Telework: conditions that have a positive and negative impact on the work-family conflict. *Academia Revista Latinoamericana De Administración, 29*(4), 435–449. <https://doi.org/10.1108/ARLA-10-2015-0289>

* Solís, M. (2017). Moderators of telework effects on the work-family conflict and on worker performance. *European Journal of Management and Business Economics, 26*(1), 21–34. <https://doi.org/10.1108/EJMBE-07-2017-002>

Sostero, M., Milasi, S., Hurley, J., Fernández-Macías, E., & Bisello, M. (2020). *Teleworkability and the COVID-19 crisis: A new digital divide?* Jrc Working Papers Series on Labour, Education and Technology (2020/05). Seville. <http://hdl.handle.net/10419/231337>

* Spilker, M. A. A. (2014). Making telework work: The effect of telecommuting intensity on employee work outcomes. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 76*(5-B), No Pagination Specified.

* Vander Elst, T., Verhoogen, R., Sercu, M., van den Broeck, A., Baillien, E., & Godderis, L. (2017). Not Extent of Telecommuting, But Job Characteristics as Proximal Predictors of Work-Related Well-Being. *Journal of Occupational and Environmental Medicine, 59*(10), e180-e186. <https://doi.org/10.1097/JOM.0000000000001132>

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*(3), 1–48. <https://www.jstatsoft.org/v36/i03/>

Virick, M., DaSilva, N., & Arrington, K. (2010). Moderators of the curvilinear relation between extent of telecommuting and job and life satisfaction: The role of performance outcome orientation and worker type. *Human Relations*, 63(1), 137–154.

<https://doi.org/10.1177/0018726709349198>

Weer, C., & Greenhaus, J. H. (2014). Work-to-Family Conflict. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 7244–7245). Springer Netherlands. https://doi.org/10.1007/978-94-007-0753-5_3274

Appendix

Table A1

Main Characteristics of Studies Included in Research Synthesis

Study	Main values				Construct information				Study characteristics		Moderator manifestation within DV direction ^c				
	Correlation	Signif. ^a	n	Reliability DV ^b	DV-Type	Scale	Aggregation	Cor. Type	Location	Age	Support	Children	Boundary Management	Worktime	Flexitime
Hill et al. (2004)	-0.045		529	~0.86	WFC		Other	Point-biserial	North America						Lower (WNC)
	-0.040		529	~0.86	FWC			Point-biserial	North America						Not used (2)
Raghuram and Wiesenfeld (2004)	-0.180	**	756	0.88	W*C	O'Driscoll et al. (1992)		Pearson	North America	Lower		Lower (WNC)			
	-0.100	**	756	0.78	*WC	O'Driscoll et al. (1992)		Pearson	North America	Lower		Lower (NWC)			
Desrochers et al. (2005)	0.097		100	0.83		Bohen & Viveros-Long (1981)	Other	Pearson	North America	Higher					
Kossek et al. (2006)	-0.110		245	0.86	WFC	Gutek et al. (1991)		Pearson	North America			Lower (WNC)	Higher (WNC)	Lower (WNC)	
	-0.050		245	0.86	FWC	Gutek et al. (1991)		Pearson	North America			Lower (NWC)	Not used (2)	Lower (NWC)	
Golden et al. (2006)	-0.270	**	454	0.9	WFC	Carlson et al. (2000)		Pearson	North America	Lower					Higher (WNC)
	0.150	**	454	0.85	FWC	Carlson et al. (2000)		Pearson	North America	Lower					Not used (2)
Golden (2006)	-0.050		294	0.84	WFC	Carlson et al. (2000)		Pearson	North America	Higher					
Julien (2008)	0.034	**	16,366	0.91	WFC			Point-biserial	North America	Higher	Not used (1)				
	0.032	***	16,366	0.87	FWC			Point-biserial	North America	Higher	Not used (2)				

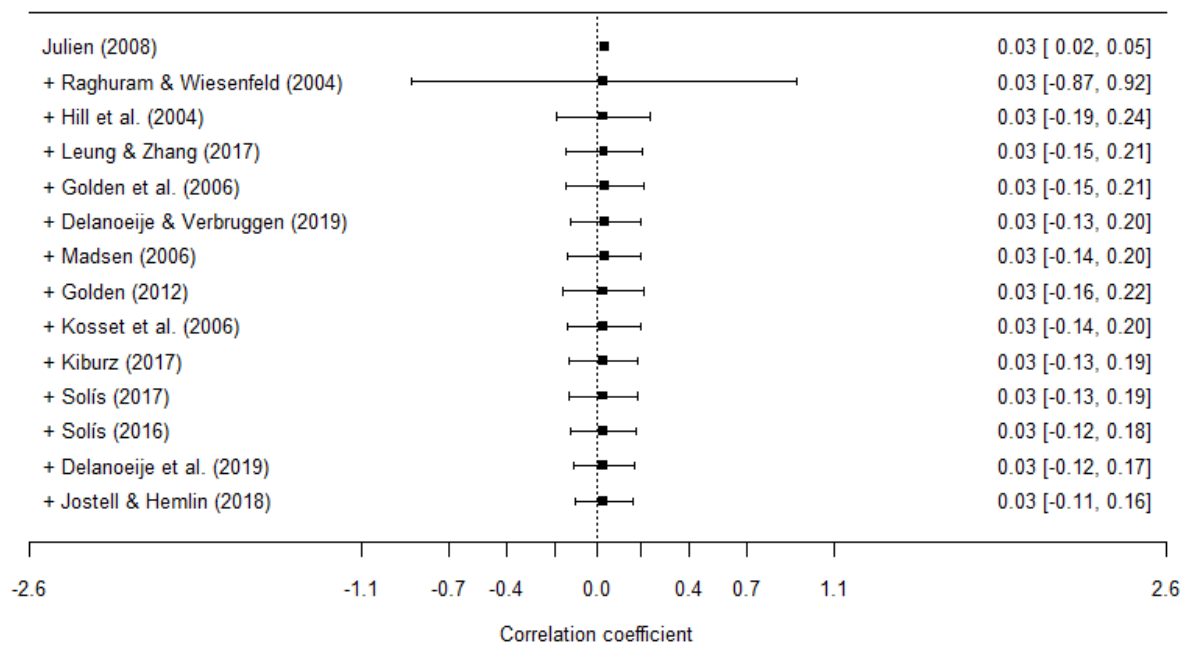
Study	Main values				Construct information				Study characteristics		Moderator manifestation within DV direction ^c				
	Correlation	Signif. ^a	n	Reliability DV ^b	DV-Type	Scale	Aggregation	Cor. Type	Location	Age	Support	Children	Boundary Management	Worktime	Flextime
Breaugh and Frye (2008)	-0.040		96	0.93	WFC	Netemeyer et al. (1996)	Other	Point-biserial	North America		Higher (WNC)				Lower (WNC)
Hornung and Glaser (2009)	-0.200	**	1,008	0.92	WFC	Netemeyer et al. (1996)		Pearson	Europe	Higher					
Peters et al. (2009)	0.110	***	807	0.67	W*C	Geurts et al. (2005)		Pearson	Europe						Higher (WNC)
Schieman and Young (2010)	0.050		1,100	0.85	W*C			Pearson	North America	Higher		Lower (WNC)		Lower (WNC)	
Eng et al. (2010)	0.050		1,103	~0.86	W*C	Frone et al. (1992)	Time/Strain	Pearson	North America	Higher	Lower (WNC)				
Fonner and Roloff (2010)	-0.260	**	192	0.87	W*C	Hill et al. (2003)		Point-biserial	North America	Lower					
Hill et al. (2010)	-0.102	***	24,436	~0.86				Point-biserial	Other	Higher		Lower (WNC)		Higher (WNC)	Lower (WNC)
Golden (2012)	-0.055	°	316	0.92	WFC	Carlson et al. (2000)	Time/Strain	Pearson	Other	Lower		Higher (WNC)		Higher (WNC)	
	-0.170	°°	316	0.94	FWC	Carlson et al. (2000)	Time/Strain	Pearson	Other	Lower		Higher (NWC)		Higher (NWC)	
Spilker (2014)	0.070		436	0.91	W*C	Fisher et al. (2009)		Pearson	North America	Higher		Lower (WNC)	Lower (WNC)	Lower (WNC)	Higher (WNC)
Lapierre et al. (2016)	0.200	°°	442	0.89	WFC	Carlson et al. (2000)	Time/Strain	Pearson	Europe	Lower	Lower (WNC)		Lower (WNC)	Not used (1)	
Solis (2017)	0.140		142	~0.86	W*C	Gutek et al. (1991)		Pearson	Other	Higher				Higher (WNC)	
	0.180	*	142	~0.86	*WC	Gutek et al. (1991)		Pearson	Other	Higher				Higher (NWC)	
Alexander (2014)	-0.050		1,046	0.87	W*C	O'Driscoll et al. (1992)		Pearson	North America	Lower		Not used (1)	Higher (WNC)		Lower (WNC)
Kiburz (2016)	-0.015		151	0.91	WFC	Carlson et al. (2000)	Measure time point	Pearson	North America	Lower		Higher (WNC)			Higher (WNC)
	-0.085		151	0.91	FWC	Carlson et al. (2000)	Measure time point	Pearson	North America	Lower		Higher (NWC)			Not used (2)
Leung and Zhang (2017)	0.190	***	509	0.72	WFC	Dilworth (2004)		Pearson	Other						
	0.110	*	509	0.75	FWC	Dilworth (2004)		Pearson	Other						
Solis (2016)	0.050		92	~0.86	W*C	Gutek et al. (1991)		Pearson	Other	Lower					

Study	Main values				Construct information				Study characteristics		Moderator manifestation within DV direction ^c				
	Correlation	Signif. ^a	n	Reliability DV ^b	DV- Type	Scale	Aggregation	Cor. Type	Location	Age	Support	Children	Boundary Management	Worktime	Flextime
	-0.070		92	~0.86	*WC	Gutek et al. (1991)		Pearson	Other	Lower					
Vander Elst et al. (2017)	0.050		878	~0.86	WFC			Point-biserial	Europe	Higher	Higher (WNC)				
Jostell and Hemlin (2018)	0.250	*	71	0.83	W*C	Gutek et al. (1991)		Pearson	Europe	Higher		Higher (WNC)	Lower (WNC)	Higher (WNC)	
	0.040		71	0.74	*WC	Gutek et al. (1991)		Pearson	Europe	Higher		Higher (NWC)	Not used (2)	Not used (1)	
Delanoeije et al. (2019)	-0.210		81	0.85	WFC	Carlson et al. (2000)		Pearson	Europe	Lower		Higher (WNC)	Higher (WNC)		
	0.030		81	0.84	FWC	Carlson et al. (2000)		Pearson	Europe	Lower		Higher (NWC)	Not used (2)		
Kaduk et al. (2019)	0.000		758	0.9	WFC	Netemeyer et al. (1996)	Voluntary/ Involuntary	Point-biserial	North America			Lower (WNC)			
Delanoeije and Verbruggen (2019)	0.250	**	381	0.9	WFC	Carlson et al. (2000)		Point-biserial	Europe	Lower		Higher (WNC)			
	0.130	**	381	0.84	FWC	Carlson et al. (2000)		Point-biserial	Europe	Lower		Lower (NWC)			
Delanoeije and Verbruggen (2020)	-0.035		77	0.93	W*C	Carlson et al. (2000)	Time/Strain	Point-biserial	Europe						
Madsen (2006)	-0.170	x	344	0.85	WFC	Carlson et al. (2000)		Point-biserial	North America			Higher (WNC)		Lower (WNC)	
	-0.120	x	344	0.85	FWC	Carlson et al. (2000)		Point-biserial	North America			Lower (NWC)		Lower (NWC)	

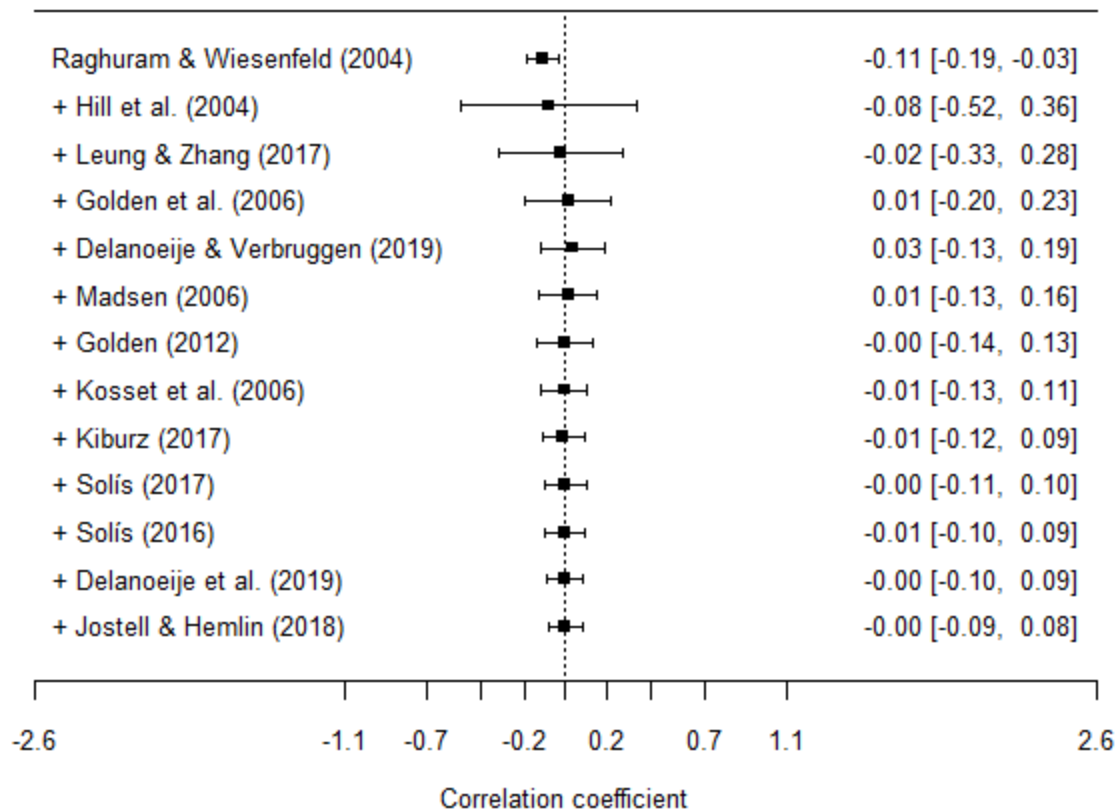
Note. DV = dependent variable, WNC = work-nonwork-conflict, NWC = nonwork-work-conflict, FWC = family-work-conflict, WFC = work-family-conflict, W*C = work-*-conflict, *WC= *-work-conflict

^a Differing symbols for aggregated measures: ° for at least one significance in merged relations, °° for merges from significant relations only, x not reported separately ^b “~” denotes imputed mean. ^c If a moderator is not used, “(1)” refers to a value identical to the median, therefore no group assignment, “(2)” refers to a moderator that could not be used in analysis because of too few studies in the subgroup

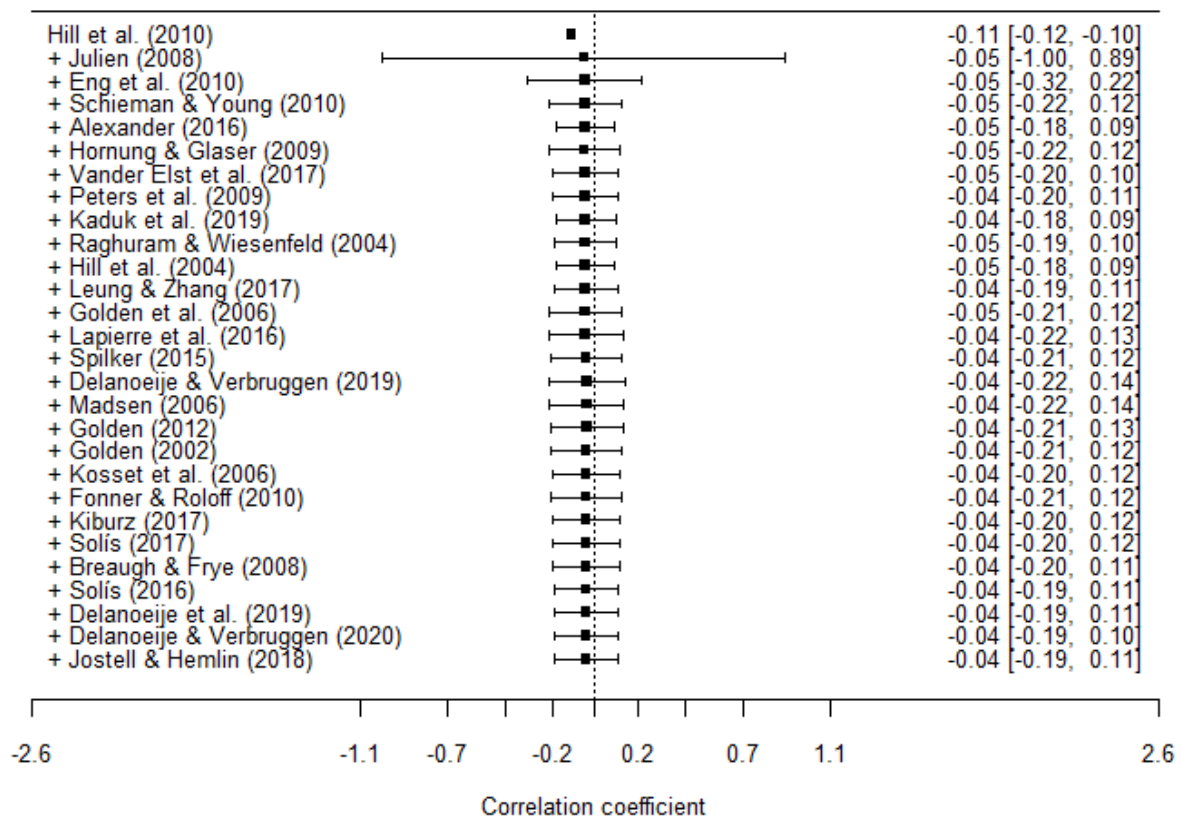
* $p < .05$ ** $p < .01$ *** $p < .001$ (if reported)

Figure A1*Cumulative Forest plot for Work-Nonwork-Conflict Subgroup*

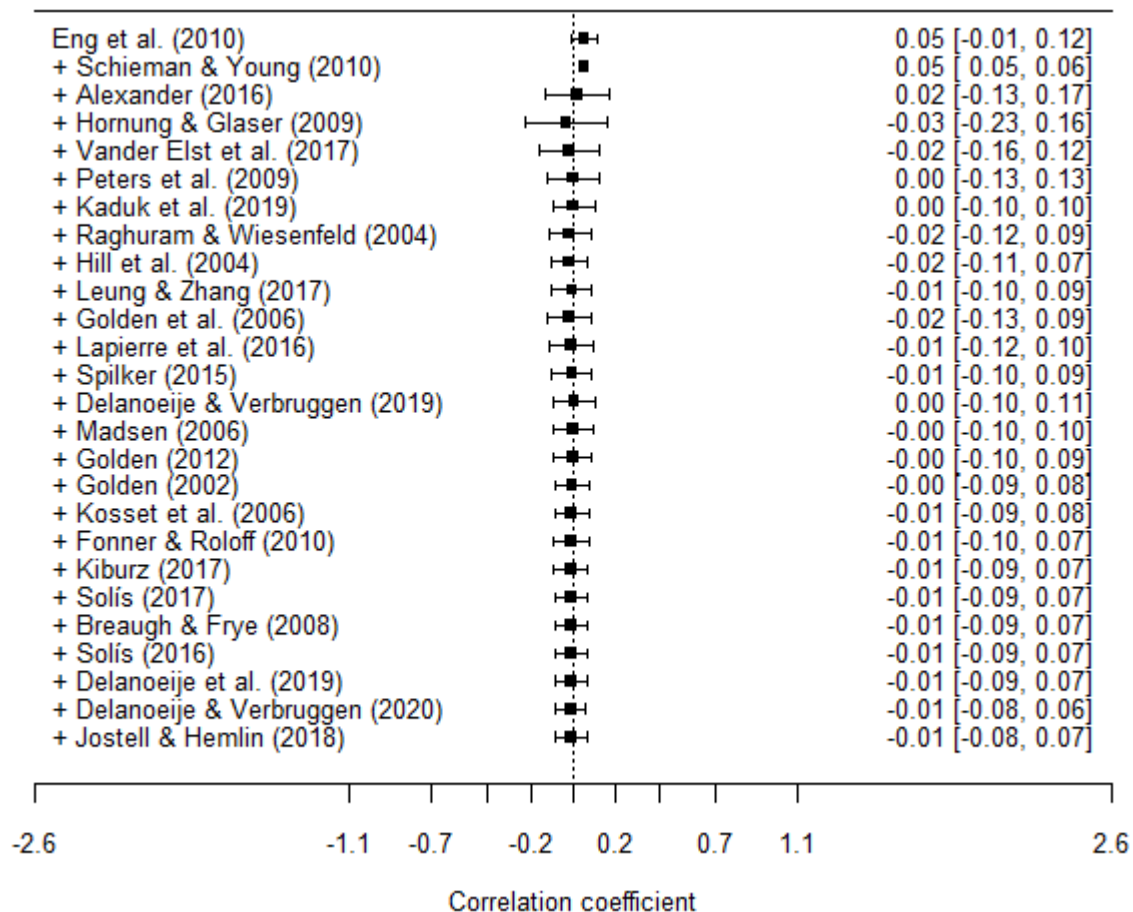
Note. The entries represent a RE-model, that includes the study in the corresponding line and all studies listed above. Dots in the plot and numbers on the right indicate the estimate of the correlation coefficient (ρ) with its 95% confidence intervals.

Figure A2*Trimmed cumulative Forest plot for Work-Nonwork-Conflict*

Note. The entries represent a RE-model, that includes the study in the corresponding line and all studies listed above. Dots in the plot and numbers on the right indicate the estimate of the correlation coefficient (ρ) with its 95% confidence intervals. Studies with $n > 10000$ were removed.

Figure A3*Cumulative Forest plot for Nonwork-Work-Conflict Subgroup*

Note. The entries represent a RE-model, that includes the study in the corresponding line and all studies listed above. Dots in the plot and numbers on the right indicate the estimate of the correlation coefficient (ρ) with its 95% confidence intervals.

Figure A4*Trimmed cumulative Forest plot for Nonwork-Work-Conflict*

Note. The entries represent a RE-model, that includes the study in the corresponding line and all studies listed above. Dots in the plot and numbers on the right indicate the estimate of the correlation coefficient (ρ) with its 95% confidence intervals. Studies with $n > 10000$ were removed.