

Night shift working mothers and their adolescent children's mutual perception of their relationships

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“For I know the plans I have for you, declares the Lord, plans to prosper you and not to harm you, plans to give you hope and a future” (Jeremiah 29: 11).

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Summary

Night shift working mothers and their adolescent children's mutual perception of their relationships

Key words: night shift, non-standard work, relationship, sleep deprivation, adolescent children

Night shift or non-standard work continues to grow throughout the economy (Beers, 2000). Women's roles in society are changing as they find themselves having to join the work force due to economic need. South African women – most of whom are mothers – are no exception in this regard. Many of these mothers are obliged to do night shift work. Sectors like manufacturing and public-oriented industries often use shift work to ensure efficient continuous operation and uninterrupted response to the needs of society. This article aims to explore the role that night shift work plays in the relationships between mothers and their adolescent children; whether the mutual perceptions of night shift working mothers and their adolescent children regarding their relationships differ from those of non-shift working mothers and their adolescent children; and whether there is a difference between the night shift working group and the non-shift working group with regard to the perceptions of their relationships. Lastly, the article aims to determine the reliability of the measuring instrument that was used in this study, namely the Parent-Adolescent-Relationship-Questionnaire (PARQ).

Available literature shows that shift work has a negative impact on health, for example stress-related illnesses due to lack of sleep (Akerstedt, 1998, 2003; Fletcher & Dawson, 1997, 2001; Presser, 2005). Family life is also affected and relationship difficulties have been reported (Chang, Wang, & Liu, 1993; Holland, 2004; Grosswald, 2003, 2004; Presser, 1995, 2000, 2003, 2005), while shift work is seen as a threat to family cohesion. Adolescence is a critical developmental stage and mothers have an important role to enhance healthy adolescent development in terms of issues like self-identity and autonomy. The mother's unusual working hours can have a negative impact on the mother-adolescent relationship.

A cross-sectional design was used in this study. There were two groups: 35 night shift working mothers and their adolescent children, and 35 non-shift working mothers and their adolescent children. Participants were requested to complete a PARQ questionnaire. Data was analysed by means of SAS and SPSS programmes. Descriptive statistic methods such as central tendency, mean and median, variability, range and standard deviation, skewness and kurtosis were used to explore data. Independent and dependent t-tests were used to determine differences between the mean scores of the night shift working and non-shift working mothers and their adolescent children. The effect size was used to provide an objective measure of a practical effect.

The findings indicate that PARQ is a reliable measure for this study as it showed good internal consistency. The skewness and kurtosis indicate acceptable normality. Adolescent children of non-shift working mothers perceive communication with their mothers as more efficient than adolescent children of night shift working mothers, and there is an indication of a significant practical effect. Adolescent children of non-shift working mothers have a more positive perception of the Mothers' Problem Solving than adolescent children of night shift working mothers, with indications of a significant practical effect between the two groups. There is no statistically significant difference between and no significant practical effect in any of the variables concerning the two groups of mothers, as reflected in Table 4. However, Table 5 shows a difference between the perceptions of the two groups of adolescents. There is a statistically significant difference between Cohesion for non-shift working mothers and for their adolescent children, with an indication of a significant practical effect. Tables 5 and 6 show a statistically significant difference between Conventionalisation of the two groups, with an indication of a significant practical effect. Both night shift working and non-shift working mothers have a more positive perception of Conventionalisation than their adolescent children. Findings also indicate a statistically significant difference in Global Distress between night shift working mothers and their adolescent children, with an indication of a significant practical effect. Night shift working

mothers experience higher levels of Global Distress than their adolescent children. For both groups –night shift working mothers and their adolescent children; and non-shift working mothers and their adolescent children – there is a statistically significant difference between the mothers' and the adolescents' perception of Ruination.

This study has several limitations and it is recommended that future studies use a larger sample size and include longitudinal studies. Future research should also explore the construct of the night shift working mother's parenting style and their coping strategies. Father-adolescent relationships should also be a research focus.

In some families in both groups, the study created a platform for dialogue between adolescents and their mothers.

OPSOMMING**Nagskofwerkende moeders en hulle adolessentkinders se wedersydse persepsie van hulle verhoudings met mekaar**

Sleutelwoorde: nagskof, nie-standaard werk, verhouding, slaapontbering, adolessentkinders

Nagskofwerk of nie-standaard werk neem steeds toe in alle sektore van die ekonomie (Beers, 2000). Die rol van vroue in die samelewing is besig om te verander, soos hulle toenemend tot die arbeidsmag toetree as gevolg van ekonomiese eise. Suid-Afrikaanse vroue – en in die meeste gevalle moeders – is geen uitsondering in hierdie opsig nie. Baie van hierdie moeders het geen ander keuse nie as om nagskof te werk. Sektore soos vervaardiging en nywerhede met 'n openbare fokus maak dikwels van nagskofwerk gebruik om te verseker dat doeltreffende, ononderbroke diens gelewer word en dat hulle te alle tye aan die behoeftes van die samelewing kan voldoen. Die doel van hierdie artikel is om die rol van nagskofwerk in die verhoudings tussen moeders en hulle adolessentkinders te ondersoek; om vas te stel of die wedersydse persepsies van nagskofwerkende moeders en hulle adolessentkinders betreffende hulle verhoudings verskil van dié van nie-skofwerkende moeders en hulle adolessentkinders; en om te bepaal of daar 'n verskil is tussen die nagskofwerkende groep en die nie-skofwerkende groep betreffende die persepsies van hulle verhoudings. Laastens het die artikel ook ten doel om die betroubaarheid te bepaal van die meetinstrument wat in hierdie studie gebruik is, naamlik die *Parent-Adolescent-Relationship-Questionnaire* (PARQ).

Beskikbare literatuur dui aan dat skofwerk 'n negatiewe impak het op gesondheid, byvoorbeeld stresverwante siektes as gevolg van te min slaap (Akerstedt, 1998, 2003; Fletcher & Dawson, 1997, 2001; Presser, 2005). Gesinslewe word ook geraak en verhoudingsprobleme is gerapporteer (Chang, Wang, & Liu, 1993; Holland, 2004; Grosswald, 2003, 2004; Presser, 1995, 2000, 2003, 2005), terwyl skofwerk ook beskou word as 'n bedreiging vir gesinskohesie. Adolessensie is 'n kritieke ontwikkelingsfase en moeders het 'n belangrike rol om gesonde

adolescentontwikkeling te bevorder ten opsigte van kwessies soos selfidentiteit en outonomie. Die moeder se ongewone werksure kan 'n negatiewe impak hê op die moeder-adolescentverhouding.

'n Dwarsdeursnitontwerp is in hierdie studie gebruik. Daar was twee groepe: 35 nagskofwerkende moeders en hulle adolescentkinders, en 35 nie-skofwerkende moeders en hulle adolescentkinders. Deelnemers is gevra om 'n PARQ-vraelys te voltooi. Data is ontleed deur middel van SAS- en SPSS-programme. Beskrywende statistiese metodes soos sentrale tendense, gemiddeld en mediaan, veranderlikheid, reikwydte en standaardafwyking, skeefheid en kurtose is gebruik om data te ondersoek. Onafhanklike en afhanklike t-toetse is gebruik om verskille te bepaal tussen die gemiddelde tellings van nagskofwerkende en nie-skofwerkende moeders en hulle adolescentkinders. Die effekgrootte is gebruik om 'n objektiewe meting van 'n praktiese betekenisvolheid te verkry.

Die bevindinge dui daarop dat PARQ 'n betroubare meetinstrument vir hierdie studie is, omdat dit goeie interne konsekwentheid . Die skeefheid en kurtose toon aanvaarbare normaliteit. Adolescentkinders van nie-skofwerkende moeders ervaar kommunikasie met hulle moeders doeltreffender as wat die geval is met adolescentkinders van nagskofwerkende moeders, en daar is 'n aanduiding van 'n praktiese effek. Adolescentkinders van nie-skofwerkende moeders het 'n positiewer persepsie van die Moeder se Probleemoplossing as wat die geval is met adolescentkinders van nagskofwerkende moeders, met aanduidings van 'n praktiese effek tussen die twee groepe. Daar is geen statisties beduidende verskil tussen en geen beduidende praktiese effek in enige van die veranderlikes rakende die twee groepe moeders nie, soos aangetoon in Tabel 4. Tabel 5 toon egter 'n verskil tussen die persepsies van die twee groepe adolescente. Daar is 'n statisties beduidende verskil tussen Konvensionalisering van die twee groepe, met 'n aanduiding van 'n beduidende praktiese effek. Nagskofwerkende sowel as nie-skofwerkende moeders het 'n positiewer persepsie van Konvensionalisering as hulle adolescentkinders.

Bevindinge dui ook op 'n statisties beduidende verskil in Globale Distres tussen nagskofwerkende moeders en hulle adolessentkinders, met 'n aanduiding van 'n beduidende praktiese effek. Nagskofwerkende moeders ervaar hoër vlakke van Globale Distres as wat hulle kinders ervaar. Vir albei groepe – nagskofwerkende moeders en hulle adolessentkinders; en nie-skofwerkende moeders en hulle adolessentkinders – is daar 'n statisties beduidende verskil tussen die moeders en die adolessente se persepsie van Ruïnering.

Hierdie studie het verskeie beperkinge en daar word aanbeveel dat toekomstige studies 'n groter steekproef behoort te gebruik en longitudinale studies moet insluit. Toekomstige navorsing behoort ook die konstruk van die nagskofwerkende moeder se ouerstyl en coping-strategieë te ondersoek. Vader-adolessentverhoudings moet ook as navorsingsfokus gebruik word.

By sommige gesinne in albei groepe het die studie 'n platform geskep vir dialoog tussen adolessente en hulle moeders.

Preface**Article Format**

For the purpose of this mini-dissertation, which is part of the requirements for a Master's degree in Clinical Psychology, the article format as described by General Regulation A 13.7 of the North-West University has been selected.

Selected journal

The intended journal for publication is the Journal of Psychology in Africa (JPA). The manuscript as well as the reference style has been styled to the journal's specification.

Page Numbering

For the purpose of the examination, page numbering will be sequential and numbered from the title page in the document. At the stage of submission to the JPA, all the journal's specifications will be adhered to.

Letter of consent

I, the co-author, hereby give consent that Nongazi Florinah Sizane may submit the manuscript entitled "Night shift working mothers and their adolescent children's mutual perception of their relationships" for the purpose of a mini-dissertation. It may also be submitted to the Journal of Psychology in Africa for publication.

Prof. E. van Rensburg

Supervisor

MANUSCRIPT

Intended Journal for publication and Author Guidelines

Intended Journal: Journal of Psychology in Africa-JPA

The manuscript has been styled according to the mentioned journal's specifications (www.elliottfitzpatrick.com). The manuscript conforms to the Publication guidelines of the American Psychological Association (6th ed., 2010)

Authors Guidelines

The **Journal of Psychology in Africa** includes original articles, review articles, book reviews, commentaries, special issues, case analysis, reports, special announcements, etc. Contributions should attempt a synthesis of local and universal methodologies and applications. Specifically, manuscript should:

- 1) Combine quantitative and qualitative data
- 2) Take a systematic qualitative or ethnographic approach
- 3) Use an original or creative approach
- 4) Address an important but often an overlooked topic
- 5) Present new theoretical or conceptual ideas.

Also all papers must show an awareness of the cultural context of the research questions asked, the measures used, and the results obtained.

Manuscript Submission

Manuscripts should be submitted in English, French, Portuguese or Spanish. They should be type-written and double-spaced, with wide margins, using one side of the page only. Manuscripts should be submitted to the editor-in-Chief, Journal of Psychology in Africa, Professor Elias

Mpofu. The manuscript must be submitted via e-mail, in MS Word and two hard copies of any e-mail submission are requested.

Manuscript format

All pages must be numbered consecutively, including those containing references, tables and figures. The typescript of the manuscript should be arranged as follows:

Title: This should be brief, sufficiently informative for retrieval by automatic searching techniques and should contain important key-words (preferably <10 words).

Author(s) and address(es) of author(s): The corresponding author must be indicated. The authors' respective addresses where the work was done must be indicated. An e-mail address, telephone number and fax number of the corresponding author must be provided.

Abstract: Articles and abstracts must be in English. Submission of abstracts translated to French, Portuguese and/or Spanish is encouraged. For data-based contributions, the abstract should be structured as follows: *Objective* – the primary purpose of the paper, *Method* – data source, subjects, design, measurements, and data analysis, *Results* – key findings, and *Conclusions* – implications, future directions. For all other contributions (except editorials, letters and book reviews) the abstract must be a concise statement of the content of the paper. Abstracts must not exceed 120 words. It should summarise the information presented in the paper but should not include references.

Referencing: Referencing style should follow APA manual instructions of authors.

Tables: Tables should either be included at the end of the manuscript or as a separate file. Indicate the correct placement by indicating insertion point in brackets, e.g. <Insert figure 1 approximately here>. Provide the title for the item and any notes that should appear at bottom of item in the manuscript text. Items should be cropped to avoid the appearance of superfluous white space around items. Text on figures and graphs must be Helvetica to maintain consistency.

Figures must not repeat data presented in the text and tables. Figures should be planned to appear to a maximum final width of either 80 or 175 mm. (0.35” or 7.0”). Complicated symbols or patterns must be avoided. Graphs and histograms should preferably be two-dimensional and scale marks be provided. All lines should be black but not too heavy or thick (including boxes). Colour must be used only in photos or colour sensitive graphic illustrations.

Text: Do not align text using spaces or tabs in references. Use one of the following: (a) use CTRL-T in Word 2007 to generate a hanging indent or (b) MS Word allows authors to define a style (e.g., reference) that will create correct formatting. 2. Per APA guidelines, only one space should follow any punctuation. 3. Do not insert spaces at the beginning or end of paragraphs. 4. Do not use colour in text.

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MANUSCRIPT FOR EXAMINATION PURPOSE

Abstract

The present study focuses on the role that night shift work plays in the relationship between mothers and their adolescent children. The aims of this study are thus to determine, firstly, whether adolescent children of night shift workers differ from adolescent children of non-shift workers in terms of perception of their relationships with their mothers; secondly, how night shift working mothers differ from non-shift working mothers in terms of their perception of their relationships with their adolescent children; thirdly, if there is a difference between the two groups in terms of their perception of their relationships; and lastly, if the measuring instrument used in this study is reliable. A cross-sectional survey using purposeful sampling was used. Two groups of 35 mothers and their adolescent children completed a Parent-Adolescent Relationship-Questionnaire (PARQ). Data was analysed by means of SAS and SPSS programmes. Findings show that adolescent children of non-shift working mothers perceive communication with their mothers as more efficient than adolescent children of night shift working mothers, and there is an indication of a significant practical effect. The Mothers' Problem Solving as perceived by the adolescent children of non-shift working mothers is better than that for night shift working mothers, with indications of a significant practical effect between the two groups. Both night shift and non-shift working mothers perceive Conventionalisation as being better in their adolescent children. Findings also indicate a statistically significant difference in Global Distress between night shift working mothers and their adolescent children, with an indication of a significant practical effect. Global Distress as perceived by the night shift working mothers is higher than for their adolescent children. Both groups – night shift and non-shift working mothers – show a statistically significant difference in their perception of Ruination compared to their children. Both groups showed a very large and large practical effect respectively. Future studies should explore the construct of night shift working mothers' parenting styles, their coping strategies and father-adolescent relationships.

Key words: night shift, non-standard work, relationship, sleep deprivation, adolescent children.

Over the past decades, women's participation in the workforce has been increasing all over the world, as in South Africa as well. This phenomenon has led to changes in their roles in society (Adler & Izraeli, 1994; Noor, 2004) and Casale (2004) refers to this growth trend as the 'feminization' of the labour market. She notes that, whereas in 1995 about 38 percent of all women of working age were active in the work force, in 2001 nearly 51 percent of them were economically active. South Africa is a developing country and in a process of societal transformation following its apartheid past. Women now have opportunities to enter the labour market in large numbers and increasingly in higher positions. This has led to a change in the way society has functioned. Casale and Posel (2002) contend that unlike other countries where women workers are being drawn into labour market because of demand for labour, in South Africa women are being *forced* to join the workforce out of sheer economic need. Women, many of whom are also mothers, have to earn salaries and wages to support their families. Some of these mothers are from dual income families, whereas others are single parents. Many of these mothers are obliged to accept jobs where they are required to do night shift work, that is, where they have to work non-standard hours. According to Statistics South Africa's quarterly Labour Force Survey (2007), the female unemployment rate declined to 26.7% from 30.7% in the same month the year before, showing that women accounted for most of the net rise in the jobs.

An increasing number of people in modern society are working outside the hours that are considered normal and they are referred to as shift workers, as opposed to day workers (Presser, 1995, 2005). As more women have been entering the labour force, there has also been an increase in shift working women. Until recently, most research on shift work and families concentrated on shift working men, although Presser has examined shift workers of both genders. Shift work is often used in two areas of industry: in the manufacturing industry, where it is more efficient to operate continuously than shut down at the end of the day and start up the plant the next morning; and in public-oriented jobs such as the police force, fire brigade and hospital services, where workers must respond to the needs of society at all times (Beers, 2000).

The term *shift work* describes a variety of working arrangements, including working outside daytime hours (such as night shifts), overtime work and irregular or rotational work patterns (Andersen, 2005; Effinger, Nelson, & Starr, 1995; Wilson, 2002). Folkard and Monk (1992) define night shift work as any regularly taken employment outside the day working window, which is between 07:00 and 18:00. For the purpose of this research, Folkard and Monk's (1992) definition of night shift work is accepted.

Detrimental effects of shift work

Shift work has a negative effect on the individual's health as well as on family interaction. In terms of health, it was found that night shift working mothers are more vulnerable to stress-related illnesses, as there is chronic sleep deprivation (Fletcher & Dawson, 1997, 2001; Presser, 2005) as well as decreased quality of sleep (Akerstedt, 1998, 2003; Akerstedt et al., 2002; Fletcher & Dawson, 2001). Sleep disturbance is one of the main reasons why irregular hours cause ailments and disorders, as extended waking leads to tiredness and reduced functional capacity. After the first 24 hours without sleep, the functional capacity may be halved and after two sleepless days, the functional capacity is at its lowest and risk of falling asleep is ever present. With prolonged exposure, the individual cannot manage to keep awake, and could find it difficult to make complex decisions (Akerstedt, 1998, 2003). Fletcher and Dawson (1997, 2001) also point out that fatigue accumulates faster during night shift than during day work. Costa (2001) suggests that women's more complex circadian and infradian (menstrual) hormonal rhythms and the extra demands related to family life can make them more vulnerable to shift work than their male counterparts. According to Shields (2002) women who work irregular shifts are also more likely than those who work daytime schedule to report high personal stress, feeling pressured, feeling unappreciated and having low mastery. Non-standard or shift workers have been found to experience poorer mental health (Deater-Deckard, 2005; Mellor, 1986), which can negatively affect parenting quality (Jackson, Brooks-Gunn, Huang, & Glassman, 2000).

There is consensus amongst researchers that shift work is detrimental to family life (Chang, Wang, & Liu, 1993; Grosswald, 2003, 2004). Maintaining a balance between work and family responsibilities has become a challenge (Barnet & Hyde, 2001). In the case of night shift work, the family as a system is facing even more challenges (Folkard & Monk, 1992). Research suggests that shift work has ripple effects on the entire family (Holland, 2004) and that shift workers complain more often about relationship difficulties and have a higher degree of family dysfunction than day workers (Chang, Wang & Liu, 1993; Grosswald, 2004). Presser (2000) also maintains that shift work may negatively affect marital stability, especially in families with children. Unhappy couples have disputes over child-rearing issues that can be particularly intense and harmful (Papp, Cummings, & Goeke-Morey, 2002). Costa's literature review (1996) refers to evidence that shift work can cause hardships in sustaining family relationships and lead to detrimental consequences for a marriage and children. Due to shift work the family's functioning gets disrupted as there is lack of time to resolve conflicts, take mutual decisions and do family things together like attending family gatherings and children's school activities. These negative interactions often forecast increases in childhood and adolescent adjustment problems over and above those attributable to other aspects of marital conflict (Deater-Deckard, 2005; Mahoney, Jourilies, & Scavone, 1997). The probability of divorce for shift workers seems to be higher than that for non-shift workers (Presser, 2000; White & Keith, 1990). This indicates that night shift work is a threat to family cohesion and stability (Presser, 2000).

Adolescents and shift working mothers

Van Rooyen and N. Louw (1994) as well as D. Louw and A. Louw (2007) define adolescence as the developmental stage between childhood and adulthood. Although there are individual and cultural differences, it seems as if adolescence in general can be viewed as a period of developmental transition (Granic, Hollenstein, Dishion, & Patterson, 2003) that entails major interrelated physical, cognitive and psychosocial changes (Papalia, Olds, & Feldman,

2006, 2008). Drawing from Erikson's psychosocial model, adolescence is a crucial stage where there is a search for identity (Papalia et al., 2006, 2009). According to Erikson's theory, each stage that we pass through involves a crisis for the developing self. For the adolescent this crisis refers to struggling and experimenting with conflicting identities as the individual moves from the security of childhood to develop an autonomous adult identity (Swartz, de la Rey, Duncan, & Townsend, 2008). Communication, interaction and "reflected appraisal" from the significant other play a critical role in influencing adolescents in terms of who they are and how they see themselves (Wood, 2006). Their parents and peers form the primary significant others during this age. During this time, adolescents need to feel that they are acknowledged and listened to. It is a crucial stage where they need to communicate their needs, and their needs must be met (Bornstein & Sawyer, 2006; Parke & Buriel, 2006; Pearson, 1993). However, this period also carries risks: some adolescents may feel overwhelmed by the challenge of having to handle so many changes at once and they may need help to overcome risks along the way. Behaviour patterns that contribute to risks in adolescence, like the use of firearms, gangsterism, alcohol and substance abuse and sexual activities, may also be prevalent (Papalia et al., 2006, 2009). Family conflict may escalate during adolescence (Allison & Schultz, 2004). The quality of parental relationships, parent-child communication and family interaction may therefore affect adolescents' transition to adulthood (D. Louw & A. Louw, 2007). However, healthy and constructive family relationships are protective factors against a number of undesirable outcomes (Roth & Brooks-Gunn, 2000).

According to Lamborn and Steinberg (1993) and Steinberg's (2005) findings, adolescent striving for autonomy seem to be accomplished best within family environments that simultaneously offer support and allow adolescents to gain emotional independence (Dacey, Kenny, & Margolis, 2004). Adolescents are most likely to become appropriately autonomous, achievement-oriented, and otherwise well adjusted if their parents recognise and acknowledge their greater need for autonomy and gradually loosen the reins. A strong relationship with

parents fosters and encourages adolescents' strivings for autonomy. Additionally, parents should consistently enforce a well seasoned set of rules while involving their teenager in discussions and decisions about self-governance issues, monitoring their comings and goings, going easy on the guilt trips, and continuing to be warm and supportive, even in the face of inevitable conflicts that arise (Barber & Harmon, 2002; Steinberg, 2002).

Mothers are seen as playing a different and intimate role with both their sons and daughters in the adolescence stage. Mothers usually spend more time interacting with children and they are more accessible to their children than fathers (Renk et al., 2003). Beckert, P. S. Strom and R. D. Strom (2007) found in their cross-cultural study that adolescents from different cultures indicated that the need to spend time with their mothers and to have access to an adult after school resulted in much higher ratings for mothers on the measuring instruments these researchers used. The important role mothers play during adolescence was also confirmed by Shulman and Seiffge-Krenke (1997), who point out that most discussions of fatherhood in adolescence have as a starting point a "deficiency" model – because the mother is seen as being the more involved parent, the father is in some way "deficient". In most countries, mothers are typically described as fulfilling a supportive function for both sexes within the family (Philip & Hendry, 1997; Williamson & Butler, 1995). Mothers use communication to teach children about relating to others, building connections and becoming emotionally competent. Noller and Callan's study, as cited by Coleman and Henry (1999), indicate that mothers are more closely in touch with their adolescents than their fathers on all topics except politics. Williamson and Butler (1995, p .303) report that:

Many other children and young people said that they would only very reluctantly discuss their personal circumstances with others ... but "mums" were most frequently described as the person within the family network with whom they would share confidences and talk through anxieties ...

This implies the significant role played by the mother in terms of supporting and understanding the adolescent. Research indicates that night-shift work may be problematic for mothers as it pulls them away from their homes at the time they would ordinarily be able to interact with their adolescent children. Han and Miller (2009, p. 36) found in their longitudinal study that increased work at night by mothers “was significantly associated with a lower quality of home environment and fewer meals together”. It was also found that maternal shift work may contribute to more behavioural problems in children (Han, 2010). The “spill-over effect” of work and family may also extend to the parent-child relationship (Crouter, Bumpass, Maguire, & McHale, 1999) by negatively influencing the quality of the relationship between the parent (mother) and her adolescent child. Long hours and role overload from work may negatively affect the quality of the relationship in terms of communication between the mothers and their adolescent children. The mother could be irritable and less willing to socialise and this would have a negative impact on her interaction with her family, especially with the adolescent child. Such a mother comes home emotionally frustrated and physically exhausted (Saskatchewan, 2007). The night shift working mother may show a lack of understanding regarding issues affecting the adolescent because of fatigue and stress. Interpersonal stress could be intensified and the mother may find herself withdrawing emotionally from her adolescent children and they may quarrel more. Miscommunication may lead to disharmony and family discord. Work-family conflict is significantly higher in women who regularly work night shifts (Barnett, Gareis & Brennan, 2008).

Although quite substantial research has been done on shift work, especially in the United States of America (Boggild & Knutsson, 1999), most research on shift work in South Africa focused on its impact on the physical and mental health of the individual shift worker. The contribution of shift work studies applicable to South Africa is limited to a few studies such as a descriptive statistical report commissioned by the tyre and rubber industry (Adler, 1991) and studies on shift work and its effects on family structure (Brophy, 1993), the well-being sequelae

of the shift workers (Goldman, 1992) and hardiness and tenure in shift work as predictive variables for coping with shift work (Potgieter, 1996). It is against this background that it is necessary to determine the role shift work may play in mother-adolescent relationships.

The aims of this study are thus to determine whether adolescent children of shift workers differ from adolescent children of non-shift workers in terms of their perceptions of their relationship with their mothers. Secondly, the aim is to determine how mothers who do shift work differ from non-shift working mothers in terms of their perception of their relationships with their adolescents. A third aim is to establish whether there is a difference between the two groups in terms of their perceptions of their relationships. Lastly, the article aims to determine whether the measuring instrument that was used in this study is reliable.

Method

Design

A cross-sectional design was used. It involves the collection of information from any given sample of population once. The cross sectional method compares different age groups at the same time and looks for differences between groups of people. The study can be completed in a relatively short period of time and participants cannot drop out of the study (Spata, 2003).

Participants

The study included 35 night shift working mothers with their adolescent children and 35 non-shift working mothers with their adolescent children. In totality, 140 participants were used. The participants were from the mining sector, private and public hospitals, correctional services, the South African Police Services (SAPS) and a chicken abattoir. The participants in both groups included both blue and white collar workers. In terms of race, 19% (n=13) of the participants were white and 81% (n= 57) were black. Adolescents were aged between 13 and 16 years. In terms of gender, 34% (n=24) were male adolescents and 66% (n=46) were females. Purposeful

sampling was used as the study required night shift and non-shift working mothers with their adolescent children between 13 and 16 years. Participants were from the North-West and Gauteng provinces.

Measuring instrument

A questionnaire was used because it is relatively economical, has standardised questions and can ensure anonymity. The subscales of the Multidimensional Assessment of Parent-Adolescent Relations Questionnaire (PARQ) were used (Robin, Koepke & Moye, 1990). This questionnaire was constructed to be a multidimensional self-report inventory of 16 scales assessing three major dimensions of family functioning; problem solving skills, beliefs/attributions and family structure (Robin & Foster, 1989).

The PARQ has been shown to have high test-retest reliability and moderate correlations between raters. The test-retest stability coefficient for the PARQ for adolescents are excellent, and all are significant at the $p < .01$ level. The test-retest stability coefficients for the PARQ parent are excellent and all are significant at the $p < .01$ level. The content validity of the PARQ has been supported by three sources: (a) derivation of the scales and items from a theoretical model, (b) a thorough review of similar measures prior to writing the PARQ, and (c) ratings of the scales and items by experienced family therapists. The construct validity of the PARQ has been strongly supported by studies comparing it to interview-based ratings of the constructs, direct observations of family interaction coded to capture the same constructs, and a multitude of self-report measures assessing similar constructs. The criterion-related validity of most scales of the PARQ has been supported by studies comparing families selected to display parent-adolescent conflict or family structure problems to non-distressed or normative groups of families (Robin, Koepke, Moye, & Gerhardstein, 2009).

Procedure and ethical considerations

Letters requesting permission to do the study were sent to the human resource managers and the supervisors at the different settings where the mothers worked. The researcher verified with the human resource managers whether there were participants who experienced difficulties to complete the questionnaire and questions were explained as neutrally as possible to the participants by the researcher. Questionnaires for data collection for both the mother and the adolescent were separately stapled and put in a plastic sleeve. Two separate letters; one requesting permission to include the participant in the study and one explaining the nature of the research – were enclosed. Questionnaires were numbered to ensure anonymity of the participants. Participants were also informed that they had the right to withdraw from the research at any time; that any information obtained from the questionnaire would be used exclusively for the purpose of the research; and that if the perturbation of the material in the questionnaire caused any stress for the participants, they could contact their own therapists or the North-West University Institute for Psychotherapy and Counselling for assistance. Approval to do the study was obtained from the North-West University Ethics Committee (approval number: NWU-00060-09-A1).

Data Analysis

Data for this study was analysed by means of SAS and SPSS programmes (SAS, 2003; SPSS, 2009). Descriptive statistics of the measure has been indicated by the central tendency; mean and median, variability; range and standard deviation, shape; skewness and kurtosis.

To measure the night shift working mothers and their adolescent children's mutual perception of their relationship, as well as the mutual perception of the non-shift working mothers and their children, independent and dependent t-tests were used. The independent t-test is used in situations in which there are two experimental conditions and different participants have been used in each condition (Field, 2005). This has been used to determine differences

between the mean scores of two groups (the night shift working mothers along with their adolescent children, and the non-shift working mothers along with their adolescent children) (Pallant, 2007). The dependent t-test evaluates the mean difference between two sets of data from a repeated measure or matched-subjects experiments (Gravetter & Wallnau, 2007). The dependent t-test was used to determine differences between the non-shift working mothers and their adolescent children, as well as the night shift working mothers and their adolescent children. The effect size has been used to provide an objective measure of an effect. It is an objective and standardized measure of the magnitude of the observed effect; indicating the strength of the relationship between two variables (Field, 2005). Cohen (1988, 1992) has also made some widely accepted suggestions about what constitutes a large or small effect for the differences in means, namely $d=0.20$ (small effect), $d=0.50$ (medium effect), $d=0.80$ (large effect). To observe a medium effect size between two groups with 80% power on a 5% level of significance, a sample of approximately 34 is required by power calculations. However, Rosenthal, Rosnow, and Rubin (2000) warn that if a non-significant p-value, but a “large” effect size is found, a too small sample may have failed to detect the true effect. They suggest that a larger sample size should be used for further research but that the original results can still be interpreted, albeit with caution.

Results

The descriptive statistics and reliability indices are indicated in Table 1 (adolescent children of respectively night shift working mothers and non-shift working mothers) and Table 2 (night shift and non-shift working mothers).

(Table 1 approximately here)

(Table 2 approximately here)

Cronbach alpha has been used to determine reliability. The values suggest good internal consistency for the scale with this group of participants. The scores varied between 0.76 and 0.91, except for the Perfectionism subscale where a Cronbach alpha of 0.48 was obtained which was not reliable, but when question 29, which had a negative correlation with the rest of the items, was removed, the reliability was 0.58 which can be regarded as acceptable. Scores below 0.5 present doubtful reliability of a specific subscale and indicate that the results of that subscale must be interpreted with caution. The results obtained in this study correlate with the internal consistency found by Robin et al. (2009).

The skewness value provides an indication of the symmetry of the distribution (Pallant, 2007). Kurtosis, on the other hand, provides information about the “peakedness” of the distribution. The skewness and kurtosis of a normal distribution is 0. In terms of the results obtained from the adolescents, all the values are fairly symmetrically distributed. The skewness and kurtosis of the results obtained from the mothers also indicate acceptable normality.

Independent t-tests comparing the means of the two groups are indicated in Table 3 and Table 4.

(Table 3 approximately here)

(Table 4 approximately here)

Table 3 offers a comparison between the adolescent children of the night shift and non-shift working mothers. For Cohesion, Eating Conflict, Global Distress, Autonomy, Ruination, Unfairness, Conventionalisation and Mother School Conflict there is no statistical significance, as the p-value is >0.05 . Mothers' communication indicates no statistically significance difference between the two groups ($p=0.086$), but there is an indication of a significant practical effect between the two groups ($d=0.39$). Adolescent children of non-shift working mothers perceive

communication with their mothers as more effective than adolescent children of night shift working mothers do.

Mothers' Problem Solving indicates no statistical difference between the groups ($p=0.14$); but there are indications of a significant practical effect ($d=0.33$) between the two groups. The adolescent children of non-shift working mothers perceive Problem Solving as better than the adolescent children of the shift working mothers do.

Table 4 indicates the comparison of the night shift working mothers and the non-shift working mothers. There is no statistical difference in all the variables, as the p -value is >0.05 and there is also no significant practical effect.

Tables 5 and 6 indicate dependent t -tests; this has been used to compare two dependent sets of measurements to assess whether their means differ. These are matched pairs of subjects, namely mothers and their adolescent children.

(Table 5 approximately here)

(Table 6 approximately here)

Table 5 shows a comparison between the non-shift working mothers and their adolescent children. For Cohesion, the probability value is <0.05 , which indicates that there is a statistically significant difference between Cohesion as experienced by the non-shift working mothers and their adolescent children. There are indications of a significant practical effect ($d=0.36$). The mean difference was 0.93, with a 95% confidence interval stretching from a lower bound of 0.03 to an upper bound of 1.83. The mean value of the adolescents is 4.26 and that of the mothers is 3.32, suggesting that Cohesion is being perceived as more positive by the adolescents than by their mothers. In Conventionalisation, the probability value is <0.05 , indicating a statistically significant difference between the non-shift working mothers and their adolescent children.

There is an indication of a significant practical effect of ($d=0.46$). The mean difference was -1.11 with a 95% confidence interval stretching from a lower bound of -1.93 to an upper bound of -0.28 . The mean value of the mothers (5.22) for their perception of Conventionalisation is significantly different from that of their adolescents (4.11). Ruination shows a probability value of <0.05 and this is indicative of a significant difference in perception between the non-shift working mothers and their adolescent children, with a large practical effect ($d=0.86$). The mean difference was -2.55 with a 95% confidence interval stretching from a lower bound of -3.57 to an upper bound of -1.53 . The mean score of the mothers is 5.98 and that of the adolescents is 3.43 , indicating a significant difference in perception of ruination for the mothers and for their adolescent children.

Table 6 shows a comparison between the night shift working mothers and their adolescent children. For Global Distress, the probability value is <0.05 , which indicates a statistically significant difference between the night shift working mothers and their adolescent children. There is an indication of a significant practical effect of ($d=0.49$). The mean difference was 0.15 with a 95% confidence interval stretching from a lower bound of -0.55 to an upper bound of 0.87 . The mean value of the mothers is 3.49 , indicating a significant difference in Global Distress perception from that of the adolescents (2.75). For Problem Solving, the probability value is <0.05 , which indicates a significant difference between the night shift working mothers and their adolescent children. There is a medium practical effect of ($d=0.54$). The mean difference was -1.13 with a 95% confidence interval stretching from a lower bound of -1.86 to an upper bound of -0.41 . The mean value of the mothers is 3.26 as opposed to the adolescents' 2.12 , showing a significant difference between their perceptions of Problem Solving. For Conventionalisation, the p-value is <0.05 and this indicates a significant difference between the night shift working mothers and their adolescent children. There is an indication of a significant practical effect of ($d=0.47$). The mean difference was -0.98 with a 95% confidence interval stretching from a lower bound of -1.73 to an upper bound of -0.26 . The mean value for

the mothers is 5.45, showing a significant difference between their perception of Conventionalisation and that of their adolescent children (4.46). The probability value in Ruination is <0.05 , indicating a significant difference between the night shift working mothers and their adolescent children. There is a very large practical effect. The mean difference was -2.92 with a 95% confidence interval stretching from a lower bound of -3.71 to an upper bound of -2.12. The mean value for the mothers is 6.04 and for the adolescents it is 3.13, indicating a significant difference in their perception of Ruination.

Discussion

The reliability indices obtained in this study (Tables 1 & 2) show good internal consistency for the scale with this sample. The results indicate that PARQ is a reliable measure of the item constructs in this study, except for the Perfectionism subscale where a Cronbach alpha of 0.48 was obtained, which was not reliable, but when question 29, which had a negative correlation with the rest of the items was removed, the reliability was 0.58 which can be regarded as acceptable. Table 3 indicates that the findings of the independent t-test of the adolescent children of the non-shift and night shift working mothers are not statistically significant in terms of Cohesion, Eating Conflict, Global Distress, Autonomy, Ruination, Unfairness and Conventionalisation. However, there is an indication of a significant practical effect in mothers' Communication between adolescent children of the non-shift and the shift working mothers. The Communication scale assesses specific positive and negative communication skills like interrupting, blaming, monopolising the conversation, arguments, listening, understanding and having consideration for each other's feelings (Robin et al., 2009). Adolescent children of non-shift working mothers perceive their communication as more efficient than adolescents of night shift working mothers. Relationships with parents during adolescence – the degree of conflict and openness of communication – are grounded in the emotional closeness developed in childhood; and adolescent relationships with parents, in turn,

set the stage for the quality of the relationship with a partner in adulthood (Overbreek, Stattin, Vermulst, Ha, & Engels, 2007). Adolescent children of non-shift working mothers possibly find themselves emotionally closer to their mothers than adolescent children of night shift working mothers, because of the amount and quality of time the non-shift working mothers and their children spend together. Presser (2003) found shift work to have a mixed association with measures of one-to-one parent-child interaction, and to be associated with decreased frequency of dinner meals with children but an increased frequency of breakfast with children. This implies that night shift working mothers might be involved in the rushed morning routine when their adolescent children are preparing to go to school, which could be a tense time. The impact of the mother's work also depends on how working affects her adolescent children. This may also hinge on how much time and energy she has left to spend with them, how well she keeps track of their whereabouts, and what kind of role model she provides (Coley, Morris, & Hernandez, 2004).

Findings in Mothers' Problem Solving show no statistically significant difference between adolescent of non-shift and night shift working mothers; but there are indications of a significant practical effect between the two groups. The Problem Solving scale assesses the parent's and teenager's ability to resolve specific disputes and conflicts effectively. Items on this scale tap on the skills needed to solve problems, such as clearly defining a problem and encouraging other family members to share their side of the problem, generating a variety of solutions, respecting and being willing to consider the other person's ideas, considering the pros and cons of the possible solutions, reaching a negotiated agreement, living up to or effectively carrying out the agreement, and staying on the topic during problem discussion (Robin et al., 2009). The Mothers' Problem Solving as perceived by the adolescent children of the non-shift working mothers is better than that of the adolescent children of the night shift working mothers. This may be explained by research (Han, 2010) that found higher levels of conflict between shift working mothers and their children. The adolescents from the shift working mothers in the

current research may therefore subjectively experience not only higher levels of conflict, but also a lesser degree of problem solving than the group of adolescents whose mothers do not work shifts. Sigelman and Rider (2009) argue that problem solving may prepare the adolescent to gain a sense of identity, think in more complex ways about moral issues and understand other people. It should be noted that night shift working mothers could have reduced stress resistance which may lead to physical, mental and emotional exhaustion and consequently chronic fatigue (Andreassi, 2006; Bear, Connors, & Paradiso, 2001), which may influence their ability to solve problems. This is also confirmed by the findings in Table 6, where a statistically significant difference ($p=0.003$) and a medium practical effect ($d=0.54$) were found between the perception of the night shift working mothers and their adolescent children regarding Problem Solving.

The findings of Table 4 show no statistically significant difference and also no significant practical effect for any of the variables in the case of both the night shift and non-shift working mothers. This means that both groups perceive Cohesion, Eating Conflict, Global Distress, Malicious Intent, Ruination, Perfectionism, Conventionalisation, Communication, Problem Solving and School Conflict in the same way. However, it is important to note that although the two groups of mothers do not differ in terms of their perceptions; the adolescents' perceptions differ, as reflected in Table 5 and 6.

The findings in Table 5 show a statistically significant difference between Cohesion in non-shift working mothers and their adolescent children, with an indication of a significant practical effect. Cohesion scale assesses a continuum of family togetherness from very connected, overinvolved, and enmeshed to very disconnected, alienated, and disengaged. The items tap into loyalty to the family, mutual support, degree of separation between generations, degree of adolescent autonomy, involvement in family activities and feelings of closeness or togetherness (Robin et al., 2009). The small practical effect in adolescents' perception of

Cohesion indicates that to a certain degree it is better than that of their mothers, but this needs further research with a bigger population.

Tables 5 and 6 show a statistically significant difference in terms of Conventionalisation between the two groups (the night shift working mothers and their adolescent children; and the non-shift working mothers and their adolescent children). There is an indication of a significant practical effect in both groups. Conventionalisation scale assesses the extent to which family members are responding in a socially desirable manner, including exaggerating the positive characteristics and minimising the negative characteristics of the family. Items include extreme statements such as “My adolescent and I understand each other totally” or “Family members never take sides against each other”. Findings indicate that night shift and non-shift working mothers may perceive their adolescents to be responding in a socially desirable manner. This could be enhancing cultural socialisation as described by Hughes et al. (2006), who maintain that parental practices that teach children about their racial or ethnic heritage, promote cultural customs and traditions. It is also possible that parents of adolescents, especially mothers, often speak positively about their relationships with their adolescents (Collins & Laursen, 2006).

Findings also indicate a statistically significant difference for Global Distress between the night shift working mothers and their adolescent children, with an indication of a significant practical effect. The Global Distress scale assesses overall dissatisfaction with the parent-adolescent relationship, evidence of general conflict, and desire for change (Robin et al., 2009). Global distress as perceived by the night shift working mothers is higher than that perceived by their adolescent children. This implies that they are dissatisfied with the parent-adolescent relation and perceive conflict. It should be noted that adolescence is a time of rapid physical, cognitive and social development, and these individual changes are often associated with change in the parent-adolescent relationship and are reflected in higher levels of conflict (Lerner & Galambos, 1998; Steinberg & Morris, 2001). This finding confirms previous research that

indicates that shift work or non-standard work schedules have decreased satisfaction with family relationships and increased stress levels at home (Presser, 2003). For both groups a statistically significant difference was found between the mothers and their adolescent children in terms of their perception of Ruination. The findings for non-shift working mothers show a large practical effect, as well as for night shift working mothers which has a very large practical effect. The Ruination scale assesses the mothers' belief that if adolescents are given too much freedom, the adolescents may do things that could ruin their life and cause them to grow up to be irresponsible adults. For the adolescent, this scale assesses an adolescent's belief that parental restriction will ruin their teenage years and interfere with personal enjoyment, opposite sex peer relationships, and recreational activities (Robin et al., 2009). The non-shift and night shift working mothers could be adhering more rigidly to this and could strongly believe that giving adolescents too much freedom will lead them to act irresponsibly and that this could negatively impact on their future. However, it should also be noted that a modest increase in parent-child conflict is also common at the onset of puberty (Steinberg, 2002). Adolescents pose challenges as they are striving for autonomy and self-identity.

Conclusion and recommendations

Adolescent children of non-shift working mothers perceive Problem Solving and Communication to be more effective in their relationships with their mothers than is the case with adolescent children of night shift working mothers. Non-shift adolescent children also perceive Cohesion and Communication as better than their mothers, which suggest that they perceive themselves to be emotionally close to their mothers and this could strengthen their relationship.

Both non-shift and night shift working mothers perceive Conventionalisation as better in their adolescent children and there is a perception that adolescent children may ruin their own future.

The night shift working mothers perceive Global Distress as higher than their adolescent children, which could affect their relationship and lead to conflict. This suggests the detrimental effects that shift work could have on their mental health and parenting quality could be negatively affected. Also, the night shift working mothers perceive Problem Solving as higher than their adolescent children. Adolescents could be feeling that there is no quality time to resolve conflicts.

The current study has some limitations: the sample was not large enough to generalise to a larger or more diverse population. Also no purposeful sampling was used. Neither is a once-off cross-sectional study sufficient to identify cause and effect relationships. Future research should include a longitudinal design to explore the long term effects of night shift work for mothers and the impact it has on their relationship with their adolescent children. The study used a self-report measure and some participants might not have responded truthfully, possibly because they wanted to present themselves in a socially desirable manner, or the PARQ might not have tapped the richness and uniqueness of experiences. Although the questionnaire was able to examine a satisfactory number of variables, it was rigidly structured and this might have reflected the preconceptions of the developers and might have led participants to respond in a particular manner. A qualitative study or a mixed-methods approach may possibly yield more conclusive results. This study focused on mother-adolescent relationship; but future research that explore the role of father-adolescent relationships in the same context of night shift working mothers, as well as the role of parent-adolescent dyads in this context, will make a valuable contribution.

The need for parents and adolescent children to talk about their unique experiences became very apparent, as the administration of the PARQ gave rise to a dialogue between mothers of both groups and their adolescent children. Comments were made like “The questionnaire helped me to talk to my mother about issues affecting me,” I realised our strengths and weaknesses in our relationship”, “I realised that we need to talk”.

In spite of the limitations, the study provided some important indicators of the perceptions of mothers and adolescents regarding their relationships and stimulated a dialogue in some families, which reflected a sense of self-awareness.

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Table 1

Descriptive statistics and reliability indices for the total group of adolescent children (N = 70)

Variable	Mean	SD	Median	Range		Skewness	Kurtosis	Cronbach alpha
				Min.	Max			
Coh	3.97	3.23	3	0	10	0.70	-0.75	0.86
Eat	2.96	2.92	2	0	10	1.03	0.13	0.84
Gds	3.02	3.32	2	0	10	0.96	-0.34	0.91
Aut	3.29	2.75	2	0	8	0.66	-1.12	0.85
Ruin	3.28	2.71	3	0	8	0.59	-0.99	0.85
Fair	3.86	2.64	4	0	8	0.12	-1.24	0.84
Cnv	4.28	2.41	5	0	8	-0.21	-1.19	0.77
Mcom	2.82	2.83	2	0	8	0.71	-0.89	0.89
Mprsl	2.56	2.44	2	0	8	0.79	-0.39	0.84
Msch	3.67	2.66	3	0	8	0.24	-1.17	0.85

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Aut = Autonomy; Ruin = Ruination; Fair = Unfairness; Cnv = Conventionalisation; Mcom = Mother Communication; Mprsl = Mother Problem Solving; Msch = Mother School Conflict

Table 2

Descriptive statistics and reliability indices for the total group of mothers (N = 70)

Variable	Mean	SD	Median	Range		Skewness	Kurtosis	Cronbach alpha
				Min.	Max			
Coh	3.43	2.91	2	0	10	0.83	-0.42	0.85
Eat	2.62	2.56	2	0	10	1.43	1.44	0.80
Gds	3.72	3.15	3	0	10	0.73	-0.90	0.88
Malint	3.99	2.28	4	0	8	0.20	-0.88	0.76
Ruin	6.01	1.74	7	1	8	-1.17	0.67	0.70
Perf	5.64	1.79	6	1	8	-0.40	-0.85	0.58
Cnv	5.34	3.01	6	0	10	-0.38	-1.13	0.82
Com	2.49	2.93	1	0	10	1.30	0.69	0.86
Prsl	3.34	2.80	3	0	10	0.75	-0.44	0.81
Sch	3.47	2.59	3	0	10	0.51	-0.42	0.75

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Malint = Malicious Intent; Ruin = Ruination; Perf = Perfectionism; Cnv = Conventionalisation; Com = Communication; Prsl = Problem Solving; Sch = School Conflict

Table 3

Independent t-tests comparing the mean scores between adolescents of the night shift and non-shift working mothers (N=70)

Variable	Day		Night		t-test	df	p-value	Effect Size
	Mean	SD	Mean	SD				
Coh	4.26	3.23	3.69	3.26	.737	68	.464	0.18
Eat	3.09	3.23	2.83	2.63	.362	68	.718	0.08
Gds	3.29	3.34	2.75	3.32	.679	68	.500	0.16
Aut	3.43	2.83	3.14	2.69	.433	68	.667	0.10
Ruin	3.43	2.81	3.13	2.65	.463	68	.645	0.11
Fair	3.75	2.83	3.98	2.47	-.354	68	.724	-0.08
Cnv	4.11	2.43	4.46	2.41	-.600	68	.550	-0.14
Mcom	3.40	2.97	2.24	2.60	1.741	68	.086	0.39*
Mprsl	2.99	2.58	2.12	2.24	1.495	68	.140	0.33*
Msch	3.70	2.76	3.63	2.59	.104	68	.917	0.02

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Aut = Autonomy; Ruin = Ruination; Fair = Unfairness; Cnv = Conventionalisation; Mcom = Mother Communication; Mprsl = Mother Problem Solving; Msch = Mother School Conflict

† p = ≤ 0, 05

**d=.5 medium effect

*d=0.2 small effect

***d=.8 large effect

Table 4

Independent t-tests comparing the mean scores between the night shift and non-shift working mothers (N=70)

Variable	Day		Night		t-test	df	p-value	Effect Size
	Mean	SD	Mean	SD				
Coh	3.32	2.65	3.53	3.18	-.288	68	.774	-0.06
Eat	2.62	2.83	2.63	2.30	-.023	68	.982	-0.01
Gds	3.95	3.03	3.49	3.30	.604	68	.548	0.14
Malint	3.89	2.52	4.10	2.04	-.383	68	.703	-0.08
Ruin	5.98	1.94	6.04	1.54	-.149	68	.882	-0.03
Perf	5.56	1.76	5.72	1.85	-.371	68	.712	-0.09
Cnv	5.22	3.01	5.45	3.04	-.329	68	.743	-0.08
Com	2.62	3.02	2.37	2.88	.345	68	.731	0.08
Prsl	3.43	2.86	3.26	2.78	.246	68	.806	0.06
Sch	3.23	2.64	3.70	2.56	-.764	68	.448	-0.18

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Malint = Malicious Intent; Ruin = Ruination; Perf = Perfectionism; Cnv = Conventionalisation; Com = Communication; Prsl = Problem Solving; Sch = School Conflict

Table 5

Dependent t-test of the Non -shift working mothers and their adolescent children (N=70)

Variable	Mothers		Adolescents		t-test	df	p-value	Effect Size
	Mean	SD	Mean	SD				
Coh	3.32	2.65	4.26	3.23	2.110	34	.042+	0.36*
Eat	2.62	2.83	3.09	3.23	1.045	34	.303	0.18
Msch	3.23	2.64	3.70	2.76	1.390	34	.174	0.23
Gds	3.95	3.03	3.29	3.34	-1.604	34	.118	-0.27
Mcom	2.62	3.02	3.40	2.97	1.850	34	.073	0.31*
Mprsl	3.43	2.86	2.10	2.58	-1.056	34	.298	-0.18
Cnv	5.22	3.01	4.11	2.43	-2.718	34	.010+	-0.46**
Ruin	5.98	1.94	3.43	2.81	-5.080	34	≤.0001+	-0.86***

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Ruin = Ruination; Cnv = Conventionalisation; Mcom = Mother Communication; Mprsl = Mother Problem Solving; Msch = Mother School Conflict

† p= ≤ 0, 05

**d=.5 medium effect

*d=0.2 small effect

***d=.8 large effect

Table 6

Dependent t-test of the Night shift working mothers and their adolescent children (N=70)

Variable	Mothers		Adolescents		t-test	df	p-value	Effect Size
	Mean	SD	Mean	SD				
Coh	3.53	3.18	3.69	3.26	.454	34	.652	0.08
Eat	2.63	2.30	2.83	2.63	.855	34	.398	0.14
Msch	3.70	2.56	3.63	2.59	-.200	34	.843	-0.03
Gds	3.49	3.30	2.75	3.32	-2.877	34	.007+	-0.49**
Mcom	2.37	2.88	2.24	2.60	-.4_9	34	.628	-0.08
Mprsl	3.26	2.78	2.12	2.24	-3.192	34	.003+	-0.54**
Cnv	5.45	3.04	4.46	2.41	-2.752	34	.009+	-0.47**
Ruin	6.04	1.54	3.13	2.65	-7.443	34	≤.0001+	-1.26***

Note: Coh = Cohesion; Eat = Eating Conflict; Gds = Global Distress; Ruin = Ruination; Cnv = Conventionalisation; Mcom = Mother Communication; Mprsl = Mother Problem Solving; Msch = Mother School Conflict

† p = ≤ 0, 05

**d=.5 medium effect

*d=0.2 small effect

***d=.8 large effect