

The role of family and neighbourhood functioning in basic psychological need fulfilment among African adolescents

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Thank You for introducing me to music.

ii. Letter of consent

We, the co-author(s), hereby give consent that David Khambule may submit the manuscript for the purposes of a mini-dissertation. It may also be submitted to Motivation and Emotion journal for publication.

Prof I. P. Khumalo

Supervisor

Dr. E. Deacon

Co-Supervisor

iii. Instructions for Authors (Motivation and Emotion)

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APA (2010). Publication manual of the American Psychological Association, 6th edition. American Psychological Association: Washington, DC.

Submissions should be structured as follows:

A Title Page lists the title of the manuscript but omits the authors' names, affiliations, and author notes.

An Abstract of 120 to 160 words offers information about the purpose of the paper, the sample and procedures, key results, and a clear statement of the implications of the findings. Below the Abstract, supply 4 or 5 keywords or brief phrases.

An Introduction introduces the research problem and explains why it is important. It describes relevant theory and past research, and provides testable, directional hypotheses.

A Method appears in subsections. A Participants section identifies the research participants and their demographic characteristics. A Procedures or Research Design section provides the timeline of events within the conduct of the study and states the experimental conditions or data analysis plan. A Measures

section provides the measures used in the collection of the data and offers evidence of the psychometric properties of those measures.

The Results reports the analyses performed and the result of the statistic tests, especially those related to the hypotheses. Generally speaking, descriptive statistics are provided in tables or figures whereas the report of the statistical tests appears in the text.

The Discussion evaluates and interprets the findings and states their implications. The section should not simply reiterate the findings. Instead, it interprets the findings, integrates them into both theory and the existing empirical literature, offers suggestions for future research, acknowledges the limitations of the research, and addresses alternative interpretations.

A Conclusion section is optional. If provided, it should be a brief (usually a single paragraph) section that explicitly states the contribution of the study and it move the research literature significantly forward.

Many papers will feature multiple experiments. For these submissions, the arrangement of sections reflects the above structure but includes additional headings such as —Study 1|, —Study 2|, and —Study 3|. Each study is to include its own Introduction, Method, Results, and Discussion sections.

For References, Footnotes, Tables, and Figures, follow the guidelines of the APA Publication manual. An Appendix may be an appropriate final section to provide stimulus materials or the items within a newly-developed questionnaire.

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iv. Summary

The role of family and neighbourhood in basic psychological need fulfilment among African adolescents.

Keywords: Family, neighbourhood, basic psychological needs, adolescents, Africa.

There is a general lack of empirical research on the influence of context in basic psychological needs satisfaction amongst adolescents in African settings. The aim of the current study was to investigate the role and influence of living environments on basic psychological needs satisfaction in a sample of African adolescents. The two settings of family and neighbourhood were the focus of this study.

An available sample of 977 African adolescents completed a measurement booklet consisting of socio-biographical information, scales on family functioning, sense of community and basic psychological needs. Consent and assent were obtained prior the inception of data collection efforts. Family functioning was operationalized through the Family Assessment Device-General Family Function (FAD-GFF) scale of the McMaster Model of Family Functioning, indication of community functioning was operationalized through the Sense of Community Index-2 (Chavis, Lee, & Acosta, 2008), and the basic psychological needs that was operationalized through the Balanced Measure of Psychological Needs scale (Sheldon & Hilpert, 2012).

For each of the studies various measurements including alternative models were tested. The findings showed that family functioning (study 1) had a direct influence on the satisfaction of basic psychological needs. Sense of community in study 2 had no direct effects on the

psychological needs. Last, in study 3 family functioning was allowed to interact with sense of community, conversely the results showed that family did not moderate this relationship.

Overall results of this study were consistent with other findings although unique features were identified particularly for this data. Family continue to be an important context for growth and development more so among adolescents who tend to be more dependent on their contexts for needs satisfaction. Characteristics of communities are also known to have a negative effect on health and mental outcomes among adolescents, especially if these communities are characterized by low socioeconomic status and structural dysfunctioning as restricted access to basic and vital amenities, opportunity for socialisation, and other distal factors.

In summation, the study offers psychosocial researchers insight into the significance of context and its dynamics in psychological need satisfaction. This then ought to be the first and foremost step before attempts are made to intervene in families and communities where adolescents live. Implications for practice and recommendations for further research are also provided.

v. Opsomming

Daar is 'n algemene gebrek aan empiriese navorsing oor die invloed van konteks op die basiese psigologiese behoeftes van tevredenheid onder tieners in instellings in Afrika. Die doel van die huidige studie was om die rol en invloed van lewende omgewings op basiese psigologiese behoefte bevrediging in 'n steekproef van tieners in Afrika te ondersoek. Die fokus van hierdie studie is die gesin en die omgewing. 'n steekproef van 977 tieners in Afrika het 'n metings boekie wat bestaan uit sosio- biografiese inligting, skale op gesinsfunksionering en 'n gevoel van gemeenskap en basiese psigologiese behoeftes. Toestemming en instemming is voor die aanvang van die data-insameling verkry. Gesins funksionering is geoperasionaliseer deur die Family Assessment Device-General Family Functioning (FAD-GFF) omvang van die McMaster model van gesinsfunksionering, aanduiding van die gemeenskap funksionering is geoperasionaliseer deur die Sense of Community Index-2 (Chavi, Lee, & Acosta, 2008), en die basiese sielkundige behoeftes watgeoperasioneel is deur die Balanced Measure of Psychological Needs Scale (Sheldon & Hilpert, 2012).

Vir elk van die studies was verskeie meetingsinstrumente getoets, insluitend alternatiewe modelle. Die bevindinge het getoon dat gesinsfunksionering (Studie 1) 'n direkte invloed op die bevrediging van basiese psigologiese behoeftes het. Gevoel die gemeenskap in studie 2 het geen direkte invloed op die sielkundige behoeftes nie. Laastens, in studie 3, was gesinsfunksionering toegelaat om met gevoel van die gemeenskap te, is omgekeerd die resultate het getoon dat familie nie hierdie verhouding het modereer.

Algehele resultate van hierdie studie is gelykstaande met ander bevindinge hoewel unieke eienskappe uit die data geïdentifiseer is. Familie bly steeds 'n belangrike konteks vir die groei en ontwikkeling varal vir adollesente wat geneig is om afhanklik te wees op hulle konteks

vir behoefte bevrediging. Eienskappe van gemeenskappe staan ook daarvoor bekend om 'n negatiewe effek op psigiese en fisiese gesondheid te hê as dit gekenmerk word deur lae sosio-ekonomiese status, strukturele disfunksies, beperkte toegang tot basiese behoeftes, geleentheid vir sosialisering en ander distale faktore. In opsomming bied die studie, psigo-sosiale navorsers insig tot die betekenis van konteks en die dinamika in sielkundige behoefte bevrediging. Dit behoort dan die eerste stap te wees vir pogings aangewend word vir intervensies met tieners in families of gemeenskappe. Implikasies vir die praktyk en aanbevelings vir verdere navorsing word ook voorsien.

Manuscript for examination**The role of family and neighbourhood functioning in basic psychological need fulfilment
among African adolescents****P. David. Khambule¹, Itumeleng P. Khumalo^{1*} and Elmari Deacon¹.**

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FAMILY AND NEIGHBOURHOOD ON BASIC PSYCHOLOGICAL NEEDS

Abstract

Self-determination theory proposes that basic psychological needs are supported by the social environments. Three studies were conducted using structural equation modelling in Mplus to determine the influence of family and neighbourhood functioning on basic psychological needs. A sample of 977 adolescents (14 to 23 years) completed the BMPN, SCI-2 and FAD. Study 1 (N = 488) found that poor family functioning negatively influenced the satisfaction of needs. In study 2 (N = 489) sense of community had no influence on the psychological needs. Study 3 showed that family functioning did not moderate the relationship between sense of community and satisfaction of psychological needs. How adolescents perceived and experienced their interaction with their families played a role in the satisfaction of their needs in these studies. This study has implications for practitioners who work with adolescents, especially how they can partner with and guide them towards culturally sound ways of expressing their psychological needs. For counselling psychologists this knowledge can inform interventions on motivation and well-being promotion among adolescents.

Abstract word count: 168 words.

Keywords: Family, neighbourhood, self-determination theory, adolescents, African.

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The role of family and neighbourhood functioning in basic psychological need fulfilment among African adolescents.

Research efforts on strengths (Park, Peterson, & Seligman, 2004), developmental assets (Scales, Benson, Roehlkepartain, Sesma, & van Dulmen, 2006), positive youth development (Lerner, 2009) and resilience (Theron & Theron, 2010) amongst adolescents in a variety of settings is an encouraging development in psychology. The research interest in adolescents in various sociocultural contexts and life domains and not only in adults is important (Lerner, 2005). Adult-based models and adult-oriented theories and interventions are insufficient for understanding adolescents' functioning and well-being, and conclusions from such research cannot be applied blindly to this unique group and developmental stage (Kirschman, Johnson, Bender & Roberts, 2009). Based on this awareness the present study focused on African adolescents in their natural context of family and community. Self-determination theory (Ryan & Deci, 2000a, 2000b) was used as the central theoretical framework.

Towards a positive view of adolescence

As a natural progression from childhood to adulthood, it is during adolescence that children's biopsychosocial development is at its peak (Steinberg, Vandell, & Bornstein, 2011). It is during adolescence that self-concept and personality development, mental health, academic achievement, peer and romantic relationships are in rapid development (Steinberg, Vandell, & Bornstein, 2011). This is witnessed in how they begin to understand, perceive and interact with their environments at a more independent level as these complex changes allow them to transition into adulthood (Zarret & Eccles, 2006). Although literature from previous research has conceptualised and perceived adolescence as a period marked by risk, storm, distress and vulnerability (e.g. Hall, 1904), there is an emergence of a more balanced and positive view of

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adolescence as already being demonstrated by positive psychology (Peterson & Park, 2003) and positive youth development (Lerner, 2005, 2009). This view presents adolescence as also characterised by experiences and expressions of positive emotions, strengths and virtues, valued subjective experiences, positive mental health, positive identity development and altruistic behaviour (Rich, 2003; United Nations Children's Fund, 2006). Therefore, adolescence is not all troublesome and chaotic as previously thought, but presents an opportunity for positive development and growth (Lerner, 2005).

Self-determination theory and Basic psychological needs

This study applied the self-determination theory (SDT; Ryan & Deci, 2000a, 2000b) as a theoretical framework of human motivation and well-being. Developed and refined throughout a period of about 40 years, SDT is an approach to human motivation and well-being that employs a holistic and meta-theoretical framework for understanding the significance of individual's inner resources and external conditions that support these resources (Ryan & Deci, 2000a, 2000b). As a macro theory, SDT comprises of five mini-theories that individually help explain human motivation, behaviour, and health. For the purpose of this study and guided by its aims the Basic Psychological Needs Theory (BPNT; Ryan & Deci, 2000a) was applied as an explanatory and operational model for studying the influence of family and community on the satisfaction of needs among African adolescents.

The central thesis of the BPNT is that human beings have three innate basic psychological needs of relatedness, competence and autonomy that are thought of as universal and pan-cultural (Ryan & Deci, 2000a; 2000b). These three needs are the foundation and nutrients for motivation, mental health, optimal living, vitality and general psychosocial well-being (Ryan & Deci, 2000a). *Relatedness* refers to the sense of connectedness one experiences in

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relation to his/her social environment, and feelings of being cared for by others in their context (Barber & Schluterman, 2008; Deci & Vansteenkiste, 2004). Sense of connectedness to one's context including social relations with peers has been found to positively correlate with pro-social intentions and behaviours as volunteerism and charity work (Pavey, Greitemeyer, & Sparks, 2011). *Competence* refers to the feelings of mastery over one's environment and the extent to which an individual experiences efficacy beliefs and feelings about achieving self-endorsed goals in one's area of growth and the ability to have a positive effect on the environment (Barber & Schluterman, 2008). *Autonomy* refers to the extent to which an individual feels he/she has a choice over the course of his/her behaviour, instead of being told what and what not to do or being dictated to by others (Deci & Vansteenkiste, 2004). It therefore reflects the extent to which an individual feels that his/her behaviour is self-endorsed. Autonomy should, however, not be mistaken for and is not the same as individualism and independence (Chirkov, Ryan, Kim, & Kaplan, 2003).

Sheldon and Hilpert (2012) and Cordeiro, Paixão, Lens, and Silva (in press) have argued and provided empirical evidence for the equal standing of the three needs, and not treating one or more needs as more important than others. The three needs are not independent of each other, together they are seen as a whole instead of parts with no specific order in which they must be satisfied (Sheldon & Hilpert, 2012). Satisfaction of one need could thus be significant for the activation or satisfaction of other needs (Deci & Ryan, 2012). Sheldon and Hilpert (2012) have also suggested that the satisfaction and frustration of basic psychological needs should be operationalized as separate, yet related dimensions. Subsequently their scale, the Balanced Measure of Psychological Needs (BMPN; Sheldon & Hilpert, 2012) has two dimensions for each of the three needs (subscales), one per need satisfaction and the other for need frustration.

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Empirical evidence has shown that the satisfaction of basic psychological needs results in motivation, and subsequent well-being (Niemic et al., 2006; Şimşek & Demir, 2012; Véronneau, Koestner, & Abela, 2005). Societal and environmental contexts, including family, community, work and school, are key factors contributing to the satisfaction of needs (Niemic et al., 2006). Research on psychological needs with adolescents across cultures has demonstrated the importance of satisfaction of needs, and implications thereof on this cohorts' psychological well-being and behavioural outcomes such as hope (Wander & Bundick, 2011), subjective well-being (Şimşek & Demir, 2012), academic achievement (Van Ryzin, Gravely, & Roseth, 2009), mental health (Wandeler, Lopez, & Baeriswyl, 2011), and positive identity formation (Lyckx, Vansteenkiste, Goonssens, & Duriez, 2009). In summation, empirical research shows that psychological needs are not merely experimental requirements but they are authentic needs (Sheldon & Gunz, 2009).

Although the expression of and variance in the satisfaction of these needs may occur and differ from culture to culture and person to person; research has indicated that they remain stable across cultures, life course and gender (Ryan & Deci, 2000; Sheldon et al., 2004). However, Milyavskaya and Koestner (2011) have suggested that different cultural groups and orientation could thwart and or support these needs differently because of varying degrees of emphasis placed on the different needs. The satisfaction of these needs is, however, vital for motivation and subsequently well-being, whereas lack of support for or frustration of these needs leads to amotivation (Deci & Ryan, 2000a; 2000b). Nevertheless, socio-environmental characteristics play a role in either the satisfaction or thwarting of these needs (Deci & Ryan, 2008a; 2008b).

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Basic psychological needs and adolescents' development

The dynamic person-process-context interaction is important in that the social environment within which one functions is vital for the satisfaction of one's needs (Darling, 2007; Ryan & Deci, 2000a). Human beings are in constant, dynamic and reciprocal interaction, with various characteristics of their social environments. Recently in a sample of Turkish high school students, Kuzucu and Şimşek (2013) found a negative association between psychological needs satisfaction and aggression; thus adolescents who experienced their psychological needs as supported and satisfied reported fewer incidences of aggressive outburst. In a study with Greek girls, Ntoumani, Ntoumanis and Nokitaras (2010) found that parental support for the basic psychological needs was positively related to healthy eating. In the same study the support for basic psychological needs was negatively correlated with the drive for thinness and body dissatisfaction (Ntoumani et al., 2010). If one's living environment is supportive of his/her basic psychological needs, an individual's inclination towards optimal developmental and health becomes activated (Deci & Ryan, 2000a). Thus, in need supportive environments, people function in ways that are congruent with their basic organismic inclinations for vitality and well-being (Şimşek & Demir, 2012).

The outcomes of need satisfaction are the experience of a sense of volition, motivation and well-being. Motivated people are engaged and experience activities as personally enjoyable without being forced into them by any external control and environmental stimuli (Deci & Ryan, 2000a; 2000b). In contrast, if these needs are frustrated, an individual would feel compelled to engage in activities or tasks that are experienced as unpleasant, not offering an opportunity to interact with people and have meaningful contributions in such interactions (Perlman, 2010; Vlachopoulos et al., 2010). When this happens consistently an individual would become

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amotivated, and experience a general lack of intention and self-efficacy to perform (Perlman, 2010; Vlachopoulos et al., 2010). More specifically adolescents have a need to initiate and accomplish goals by themselves, including initiating, forming and sustaining meaningful relationships (Harris-McKoy & Cui, 2013; Roth et al., 2009). Accordingly, it is the frustration of their basic psychological needs that culminates into and accounts for their many challenges such as being perceived as stubborn and rebellious and experiencing difficult relationships with their parents (Harris-McKoy & Cui, 2013).

In a recent longitudinal study of over 10 000 American adolescents, Harris-McKoy and Cui (2013), found that a lack of support for autonomy as well as inappropriate parent control were associated with criminal behaviour. The satisfaction of basic psychological needs has been associated with positive outcomes in interpersonal relationships (e.g. Le Guardia, Ryan, Couchman, Deci, Roscoe, & Ryan, 2000), occupational (e.g. Baard, Deci, & Ryan, 2004), and educational settings (e.g. Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Roth et al., 2009). For adolescents the family, school and neighbourhood environments form primary social contexts within which they grow and develop (Aufseeser, Jekielek, & Brown, 2006). Socio-cultural practices, values and norms shape the lives and development of adolescents.

In many traditional African cultures adolescents showing signs of physiological maturation have to partake in a social internship that is culturally designed to instil values of humanity (Nsamenang, 2002). During this time, informal pedagogy is offered on social responsibility, group solidarity, cultural expectations and norms, ancestry and leadership (Nsamenang, 2002). The emphasis on values of social and communal connectedness and relations are consistent with the assertions of Mbiti (1990) and Wissing and Temane (2008) who accord that Africans tend to be more collectivistic than individualistic in cultural orientation. Up

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to this point, research on the nexus between basic psychological need satisfaction and living environments among African adolescents has been limited. Because context plays a role in understanding and assessing well-being in a culture and context relevant manner, knowledge about where, how and who regarding African adolescents then becomes undeniably a significant point to consider (Khumalo, 2013) before even asking how they are doing. It is on the basis of successful attempts to respond to dilemmas pertaining to African adolescents that interventions geared towards promoting, facilitating and enhancing psychosocial well-being and influencing policy so that it champions the needs of adolescents could be based.

Present Study

The present study focused on living environments of family (family functioning) and neighbourhood (sense of community). The focus is specifically on exploring the role and functioning of the family and neighbourhood contexts on basic psychological needs satisfaction. A quantitative and cross-sectional study involving 977 school going adolescents between ages of 14 and 23 was conducted. Both male and female participants were included in the study. The total sample of 977 was randomly divided into two equivalent samples for study 1 (N = 488), study 2 (N = 489) and for study 3 participants (N = 977) from both study 1 and 2 were included in the analysis.

The three studies. All participants completed a battery of scales that included a self-developed socio-demographic questionnaire, a measure for basic psychological needs, family functioning, and sense of community. Through this effort, the influence of family functioning (study 1), and sense of community (study 2) on the basic psychological needs satisfaction as well the moderation role of family functioning (study 3) were investigated in three separate studies. The hypotheses and expectations were as follows 1) General family functioning would have a direct

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effect on the satisfaction of basic psychological needs namely relatedness, competence, and autonomy. 2) Sense of community dimensions would have a direct effect on the satisfaction of the basic psychological needs. 3) Family functioning would moderate the influence of sense of community on the satisfaction of the relatedness, competence and autonomy.

Procedure and ethics. This study was granted ethical permission by Optentia Research Ethics Committee (Ethics number: OPT-2013-002) and approved by the University Ethics Committee. Permission was also granted for the study to be conducted in schools by the North West Provincial Department of Education. Participants who were below the age 18 years were considered and appropriately protected as children. Applying the *loco parentis* principle the schools' principals consented for the learners to participate in this study (Child Care Act, 2005). The battery was in English, and completed by individual learners in supervised groups.

Participation was voluntary; the researchers remained aware of their duty to report any information regarding child abuse or neglect. However, none of the questionnaires were designed to probe about or collect information regarding abuse or neglect. Confidentiality of the participants was safeguarded by them completing their biographic information on a separate form which only the researcher could trace back to each participant. No foreseeable risk was posed by participating in this study. Supervision by interns in research psychology who were also researchers and the availability of debriefing opportunities were utilised and seen as risk containment measures. No form of remuneration for participation was offered. A data set in an appropriate statistical software package was created. The raw responses will be stored for a period of ten years. During this time, the primary investigator will have access to the data which will be owned by him via his association with North West University.

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Study 1:

The influence of Family Functioning on the Satisfaction of Basic Psychological Needs among African adolescents

The family is usually an individual's first contact with the world (Strong, DeVault, & Cohen, 2008). In this life domain, younger members in families are socialized into and adopt norms, values and regulations that govern appropriate behaviour (Grusec, 2011; Strong et al., 2008). In this period of life, family plays a key role in its members' psychosocial development, the choices they make and their overall well-being (Strong et al., 2008). This is especially true in relation to children and adolescents who are often dependent on adults in their families for the satisfaction of their physiological and other needs (Moore & Lippman, 2005). Empirical research (Aufseeser, Jekielek, & Brown, 2006; Eisemberg, Olson, Sztainer, Story, & Bearinger, 2004; Moore, Guzman, Hair, Lippman, & Garrett, 2004; Spagnola & Fiese, 2007) has shown that family environments characterized by shared rituals and activities, parental monitoring, positive parent-adolescent connectedness, positive communication, and parental support have a positive effect on the well-being of children.

Furthermore, positive family functioning is associated with academic achievement (Annunziata, Hogue, Faw, & Liddle, 2006), psychological well-being (Shek, 2001), fewer depressive symptoms (Abbott, Hall, & Meredith, 2005), life satisfaction (Shek, 2001), self-esteem, (Paradis, Giaconia, Reinherz, Beardslee, Ward, & Fitzmaurice, 2011), healthy identity and personality development (Schwartz, Mason, Pantin, & Szapocznik, 2011) among children and adolescents in various settings. On the other hand negatively functioning families have been shown to predict negative biopsychosocial developmental outcomes such as delinquent behaviour, depression, dropping out of school, sexual aggression, and violence (Cassidy, 2011;

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Mack, Leiber, Featherstone, Monserud, 2007). Aufseeser et al. (2006) has reported a negative association between delinquent behaviours and positive parenting behaviours and supportive family environments. Similarly substance use and delinquent behaviour are negatively associated with well-being (Eisemberg et al., 2004).

It is generally accepted that families are critical for adolescents' psychosocial development (Strong et al., 2008). Children and adolescents depend on the adults in their families for social support (Klineberg et al., 2006; Rotheron, Goodwin, & Stansfeld, 2012), and other related needs. The fact that family is often an individual's first contact with the world also infers that later behaviour and patterns can be understood and explained in light of experiences adolescents encountered in their families (Vanier & Searight, 2012). Family cohesion and positive bonds between children, parents and siblings are components of positive family functioning (Olson, 2011). In fact, high levels of cohesion and positive parenting behaviours in families are associated with positive behavioural outcomes in adolescents (Parker & Benson, 2004; Wissink, Dekovic & Meijer, 2006).

Intrinsic motivation and well-being can be facilitated and achieved if families become supportive of the basic psychological needs of relatedness, competence and autonomy for children and adolescents (Deci & Ryan, 2009). Subsequently, adolescents become more active and have a greater sense of ownership over their behaviour, choices, and thoughts. This experience of volition can also influence their opportunities for and patterns of interaction with people in their circles and eventually their sense of mastery over their environments (Assor & Talk, 2012; Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). Therefore psychological need satisfaction would not only facilitate the process of goal attainment, it could also provide the necessary energy needed for adolescents to pursue their self-determined goals. Thus, need

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satisfaction as supported and facilitated by families has multiple benefits, including happiness (Şimşek & Demir, 2012), well-being (Chirkov & Ryan, 2001; Kagitcibasi, 2005; Lekes et al., 2010), positive identity development and psychological well-being (Abudakar et al., 2013), and problem solving skills and self-efficacy (Guerra & Toro, 2010).

In the present study the McMaster model was used as a framework for family functioning and to capture the reported experience and quality of family functioning. According to this model, as operationalized through the Family Assessment Device (FAD; Epstein, Baldwin & Bishop, 1983), family functioning is assessed on the basis of seven dimensions of problem-solving, communication, roles, affective responsiveness, affective involvement, behaviour control, and overall general family functioning. *Problem solving* refers to the family's ability to deal with difficulties that threaten its positive functioning. *Communication* refers to both overt and covert ways in which family members transmit, interpret and send back information. *Roles* refer to behavioural repertoires that individuals engage in to fulfil their expected functions. *Affective responsiveness* refers to the extent to which the family is aware and able to respond with appropriate empathy in a range of situations. *Affective involvement* refers to capacity of the family to be selflessly engaged in the welfare of other members and to show appropriate levels of care and empathy. *Behaviour control* refers to regulatory patterns through which the family is able to meet group-endorsed goals, maintain its functioning and stability across situations.

The last subscale of the FAD, the *General Family Functioning*, assesses the health-to-pathology spectrum of family functioning (Epstein et al., 1983; Ryan, et al., 2005). The health end of the spectrum represents positive family functioning and the pathology end represents dysfunctional family functioning. According to Shek (2001) and Kazarian (2010) this subscale is a good indicator of overall assessment of family functioning. It has been used by Shek (2001;

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2002), Kazarian (2010), and Naghavi (2011) in research involving adolescents. Although questions have been raised about the cross-cultural application of the FAD and its factor structure (Aarons, McDonald, Connely, & Newton, 2007; Shek, 2002), the FAD is one of the widely used measures of family functioning (Ryan et al., 2005). Studies by Kazarian in Armenia (2010) and Shek in China (2001) found the FAD to be culturally appropriate in the Armenian and Chinese populations respectively. In South Africa the FAD was used by Botha, Van den Berg, and Venter (2009) who also reported acceptable reliability.

Within positively functioning families adolescents are accepted for who they are (Roth & Assor, 2010; Roth, Assor, Niemic, Deci, & Ryan, 2009), parents monitoring is not overly controlling (Foltz, 2011) and parents often know where their children's activities are taking place and who is with them (Lerner, 2005; 2009). Such family functioning has been linked particularly to satisfaction of the relatedness need. Hessler and Katz (2010) reported negative association between competence satisfaction and aggression, early sexual encounters, and risky behaviour among adolescents. Adolescents whose need for competence is satisfied also report better social skills and abilities as cooperation and negotiation that allow them to work effectively with others in their families to achieve mutual goals (Englund, Levy, Hyson, & Sroufe, 2000), thus contributing to the welfare of their families.

Method

Participants and Setting

A sample of 488 adolescents participated in this study, 227 (46.5%) were male, 259 (53.17%) female, two participants did not report their gender. Average age was 17.12 ($SD = 1.60$), with a range of 14 to 23 years. The majority indicated Setswana as their home language and represented 93.6% (457) of the total sample; seven participants did not indicate their home

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language. Almost 60% of the participants had either biological parents or significant other supervisory adult(s) whom they lived with. Regarding the socioeconomic status of the participants, 172 (35.2%) reported a monthly government grant was the main source of their household income, 146 (29.9%) lived with an employed adult, 105 (21.5%) indicated that both monthly government grant and an employment of an adult in their families constituted the main source of income for their family. Thirty-eight (7.8%) participants indicated “other” which could include self-employment of parents or the informal income generation activities category for household income, 22 participants did not indicate their source of family income. In South Africa, the government offers monthly social support financial grants for child support and grant-in-aid of ZAR 290.00, foster child grant of ZAR 800.00, older persons’ grant, disability and care dependency grants for ZAR 1 260.00 respectively lastly, war veterans’ grant for ZAR R1 280.00 (South African Social Security Agency, 2013).

Measuring instruments

Basic Psychological Needs. The Balanced Measure of Psychological Needs (BMPN; Sheldon & Hilpert, 2012), is an 18 item self-report measure designed to report the satisfaction and frustration of basic psychological needs: relatedness, competence and autonomy based on BPNT (Ryan & Deci, 2000a; 2000b). Respondents indicate on a 5-point Likert response format the extent to which they do not agree (1) to much agreement (5) on all items. Each of the three factors has three items for need satisfaction and three for need frustration. The three basic needs form three separate but distinguishable subscales for relatedness (BMPN-R), competence (BMPN-C), and autonomy (BMPN-A). Reliability and validity of this scale was reported by Sheldon and Hilpert (2012) in a sample of American university undergraduate students. In a sample of Portuguese secondary school learners Cordeiro, Paixão, Lens and Silva (in press),

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found acceptable reliabilities for needs satisfaction and needs frustration using the BMPN scale. No South African studies applying the BMPN could be found. In the present study, the basic needs satisfaction and not frustration was evaluated, the scale therefore obtained Confirmatory Factor Analysis-based reliability index (see Gu, Little, & Kingston, 2013; Wang & Wang, 2012) of .81.

Family Functioning: The General Family Functioning subscale of the Family Assessment Device was used in this study (FAD; Epstein et al., 1983). The FAD-GFF is a 12-item unidimensional measure for assessing global family functioning. Participants indicate on a 4-point Likert response format to which extent they strongly agree, to strongly disagree with statements about how they perceive their families. Higher scores are indicative of dysfunction whereas lower scores indicate better functioning. The FAD-GFF has a cut-off point of 2.00 which was applied to specifically distinguish between positive functioning families (indicated by scores below the cut-off) from dysfunctional families (indicated by scores above the cut-off) (Epstein et al., 1983). In the original study Cronbach's alpha coefficient of .92 was reported for the FAD-GFF scale (Epstein et al., 1983). The FAD was used in South Africa by Botha, Van den Berg, and Venter (2009) and they reported reliability index of .90 for the FAD-GFF scale. The FAD has been translated into various languages, and used in different countries such as China (Shek, 2001), Armenia (Kazarian, 2010), The Netherlands (Wenniger, Hageman, & Arrindell, 1993), Italy (Roncone et al., 1998), Spain (Barroilhet, Cano-Prous, Cervera-Enguix, Forjaz, & Guillén-Grima, 2009), and France (Speranza et al., 2012) and it yielded good psychometric properties. In the present study, only the nine items with factor loadings above .30 in the measurement model were used as a unidimensional scale, and they attained a CFA-based reliability index of .64.

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Data analysis

First, the mean scores and inter-scale correlations were reported for the three indices of basic psychological needs satisfaction according to the BMPN scale (Sheldon & Hilpert, 2012), and the general family functioning subscale (FAD-GFF) according to the FAD (Epstein, Baldwin, & Bishop, 1983). Second, regression analyses were performed with general family functioning as an independent variable, and the satisfaction of relatedness, competence and autonomy as dependent variables. Structural equation models in Mplus (Muthen & Muthen, 1998-2012) were used to illustrate direct effects. The fit indices: Chi-square (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Weighted Root Mean Square Residuals (WRMR) were used to report the fit of these models. Good fit is expected to be demonstrated by CFI and TLI of above .90 and lower χ^2 values (Byrne, 2012; Kline, 2011). Direct effects as an indication of the influence of independent variables on dependent variables were shown by the significance of standardised regression coefficients (β), as shown by probability values and confidence intervals at 95%.

Results

Mean scores and inter-scale correlations

Based on the FAD-GFF cut-off score of 2.00, 56% of the participants came from families that functioned well, while 44% came from dysfunctional families. Inter-scale bivariate correlations, which indicate relationships between the measured constructs show positive and significant associations among the basic psychological needs (BMPN-R, BMPN-C BMPN-A), and negative association with poor general family functioning (see Table 1). The correlation between the satisfaction of autonomy need and family functioning was not significant.

< Table 1 approximately here >

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Determining model fit

Four structural models were tested in order to investigate the direct influence of general family functioning (Independent Variable) on the fulfilment of basic psychological needs (Dependent Variable). In the first model, the FAD-GFF consisted of 12 indicator items as a unidimensional factor and regressed on basic psychological needs, each as a primary level latent variable (Relatedness; Competence; Autonomy). Model 2 had a unidimensional FAD-GFF consisting of nine items (three items were excluded on the basis of below .30 factor loading values), regressed on the basic psychological needs satisfaction as a second-order latent factor. Model 3 comprised of the 12 items of the FAD-GFF as a unidimensional factor which was regressed on psychological needs as three primary level latent variables. In model 4 nine items of representing the FAD-GFF as a unidimensional factor were regressed on basic psychological needs as second-order latent variable.

< Table 2 approximately here >

Although both models 2 and 4 obtained CFI and TLI values above .90 and lower χ^2 values indicating good fit (cf. Bryne, 2012; Kline, 2011), model 2 was the preferred one on the basis of parsimony (see Table 2). In this model the individual direct effects paths from the unidimensional FAD-GFF factor to relatedness, competence and autonomy are observed (see Figure 1).

< Figure 1 approximately here >

The individual regression coefficients indicating the direct effects of general family functioning on relatedness, competence, and autonomy are reported in Table 3. Family functioning has a significant negative direct influence on the satisfaction of relatedness ($\beta = -0.378, p \leq .05$), competence ($\beta = -0.469, p \leq .05$), and autonomy ($\beta = -0.207, p \leq .05$). From

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these results, it is shown that poor family functioning negatively influences the satisfaction of basic psychological needs in this group of African adolescents.

< Table 3 approximately here >

Discussion

The aim of study 1 was to investigate the influence of family functioning on basic psychological need satisfaction. The hypothesis that family functioning would influence the satisfaction of the basic psychological needs was tested using structural equation modelling. Family functioning was conceived as patterns of interactions that support the needs, developmental outcomes and growth of family members by providing appropriate levels of nurturance, protection, care, and support for them as guided by the six factors (i.e. problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control) of the McMaster Model of family functioning (Epstein et al., 1983; Miller, Ryan, Keitner, Bishop, & Epstein, 2000) and operationalized using the General Family Functioning subscale of the Family Assessment Device (FAD; Epstein et al., 1983). The higher scores on the FAD-GFF indicated problematic family functioning. The main finding was that poor family functioning negatively influenced the satisfaction of the basic psychological needs in this group of adolescents.

In terms of family composition of the 488 participants, 75% lived with both or either of their biological parents. All the participants reported living with two to seven other people in their household; these “other” people could be their siblings, grandparents and or extended family members. Of the 488 participants, 62.9% indicated their home income as insufficient for their family needs while the remaining 35.5% said it was sufficient. Furthermore 43.2% indicated that the available food in their households was not enough, while 54.4% said it was.

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Generally 35.2% reported that their families could afford to provide for their food and clothes but they lacked many other things. It is within this context that findings of significant influence are interpreted. Ryan and Deci (2000a) have postulated that social contextual factors had an influence on the satisfaction of needs.

Family and relatedness. Poor family functioning was associated with and predicted the dissatisfaction of relatedness as a basic psychological need. When the need for relatedness is satisfied adolescents are able to initiate and maintain relationships with others in sites (i.e. home, school, and neighbourhood) where they spend time (Ryan & Deci, 2000a). Kasser, Koestner and Lekes (2002) have reported that family environments can hinder or support developmental outcomes as the development of values. Negative features in poorly functioning families such inappropriate levels of affect, unclear and masked communication, lack of proper behavioural control that should protect adolescents from danger are broken thus affecting acquisition and development of necessary skills for effective communication, relating and interacting with others. These conditions further have negative implications on adolescents' social development (Phinney, Jo, Osorio, & Vilhalmisdottir, 2005; Steinberg, Vandell, & Bornstein, 2011).

Family and competence. In this study poor family functioning was negatively associated with the need for competence. When this need is satisfied adolescents report positive experiences in interpersonal relationships, they perform better academically, become engaged and thrive in sport and extracurricular activities (Gilman, 2001; Steinberg, 2001; Lerner, 2005; 2009). The need for competence is expressed through an individual's efficacious beliefs, the need to be effective in influencing and manipulating the socio-environmental variables to achieve desired outcomes and connecting to resources necessary for maintaining positive functioning (Ryan & Deci, 2000a). Adolescents whose need for competence is satisfied report less emotional

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problems (Engels, Finkenauer, & Deković, 2001), coping better with academic demands (Furrer & Skinner, 2003), and being able to self-regulate (Morris et al., 2007). When families are enmeshed, inflexible and not showing appropriate support for each other's welfare and parents are inconsistent in their roles, adolescents' need for competence is negatively affected because they fail to be effective in activities of their choice, and those designated to them by their families (Ryan & Deci, 2000a). Assigning ambiguous and burdensome roles to adolescents can negatively influence their sense of competence (McAdams, 2001). Conversely when reinforcement is used appropriately adolescents' already innate efficacy beliefs are encouraged and their energy to perform in ways that are congruent with their abilities are activated (Banerjee, Harrell, & Johnson, 2011).

Family and autonomy. Poor family functioning was negatively associated with and predicted autonomy dissatisfaction. The satisfaction of this need results in a sense of ownership of and volition over one's behaviour (Ryan and Deci, 2000a). An individual would thus perform in ways that are congruent with his/her basic organismic nature towards self-actualisation and integration. Deci and Ryan (2009) consider the significance of this need as being that of helping to explain the "what" and "why" of goals pursuit. Use of psychological control such as parenting behaviour that elicit shame, guilt and fear among adolescents by parents for non-obedience with their requests (Wei, Shalfer, Young, & Zakalik, 2005) has been linked with the dissatisfaction of the need for autonomy. General socio-emotional climate in poorly functioning families may also not be conducive for the satisfaction of adolescents' need for autonomy via overdependence on adolescents on needs of the family or the burden could fall on adolescents to take care of the needs of others and household chores (McKegany, Barnard, & McIntosh, 2002).

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This study's results are consistent with the self-determination theory's assertion that socio-environmental context plays a role in the satisfaction or frustration of basic psychological needs. Specifically in this study 1 family functioning played a negative role in the satisfaction of basic psychological needs amongst African adolescents. As families were appraised as not functioning well, there was a general pattern of a negative influence on need satisfaction. Outside of their families, adolescents also live and function within social contexts where they spend time with friends and socialise within their neighbourhoods and communities. Study 2 will focus on the nexus between adolescents' communities and basic psychological needs satisfaction.

Study 2:

The influence of Sense of Community on the Satisfaction of Basic Psychological Needs among African Adolescents

Adolescents tend to spend more time outside the home, interacting with friends, peers and romantic partners (Zarrett & Eccles, 2006). These social environments are usually in the neighbourhoods where they live and grow up. The composition of and dynamics in these neighbourhoods constitute community functioning (Boström, Persson, & Eriksson, 2010; Duncan & Raudenbush, 2001; Leventhal & Brooks-Gunn, 2003). Negative features within social-environments and stressful life circumstances are part of the problems that influence the well-being of young people negatively (Cicognani et al., 2008). On the other hand, positive characteristics of neighbourhoods such as availability of parks, recreational facilities, availability of opportunities for participation in structured out of school activities are associated with positive developmental outcomes such as academic achievement, lower risks for physical and mental

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illness, satisfaction with life, and subjective well-being (Morgan, Vera, Gonzales, Conner, Vacek, & Coyle, 2011).

In South Africa children and adolescents' psychosocial well-being is compromised by high crime rates, poverty, unemployment, father-absence, overpopulated schools with few teachers, lack of resources in communities, and the burden of HIV/AIDS that characterise most South African townships (Bray, Gooskens, Kahn, Moses, & Seekings, 2010). Furthermore, quality of life and well-being in rural and under-resourced communities tend to be lower compared to that in well-resourced urban environments. Rural areas tend to lack vital services such as libraries, parks/play grounds, limited schools, and community information (Department of Health and Human Services, 2011).

Adolescents who reside in rural and often low socioeconomic settings are more likely to present with mental and physical health problems, lower cognitive abilities and lower academic outcomes in comparison to their counterparts in affluent urban settings (Chapman, 2005; Leventhal & Brooks-Gunn, 2000; Romero, 2005). In contrast, adolescents in affluent urban settings have access to better schools, have better parental guidance from parents who are usually educated, they obtain speedy and better quality health care services, and have healthier meals more regularly with their families (Bradley, Corwyn, McAdoo, & Garcia, 2001; Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003; Newacheck, Hung, Park, Brindis, & Irwin, 2003).

Therefore neighbourhood conditions and functioning where people live and function have an influence on their daily life experience and are important for understanding how people perceive their neighbourhoods (Moller, 2012). Social context and culture are important determinants in motivation and personal growth outcomes (Ryan and Deci, 2000a). The nature of community functioning in contemporary post-1994 South Africa must be at the centre of

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understanding the well-being (kaSigogo, 2004) of adolescents in South Africa.

The present study was specifically interested in adolescents' interaction with, perception and experience of their neighbourhood's functioning and its' influence on the satisfaction of their basic psychological needs. In neighbourhood settings adolescents interact with peers, support one another and community members, they engage in socio-political activities and participate in charity and voluntary work (Albanesi, Cicognani, & Zani, 2008). Furthermore in these neighbourhood settings adolescents acquire and learn skills necessary for working with others to achieve collectively negotiated outcomes, and also negotiate for various resources to be provided for them in ways that promote social cohesion, as they also engage in self-exploration and learn about themselves as maturing beings (Berkman, Glass, Seeman, & Brisette, 2000). In these neighbourhoods adolescents also belong and form part of social movements and partake in activities and utilise resources in their neighbourhoods that help them grow.

The sense of community index-2 (SCI-2; Chavis, Lee, & Acosta, 2008) was used to capture the reported quality of the young person's interaction with his/her community. The SCI-2 has four dimensions namely reinforcement of needs, membership, influence and shared emotional connections and these are conceptualized as central to the definition of a community (McMillan & Chavis, 1986; Chavis et al., 2008). *Reinforcement of needs* refers to the extent to which a community is capable of meeting the needs of its members, these needs can be physiological or psychological and material and non-material. *Membership* refers to feelings of belonging one experiences in relation to being part of a community. *Influence* refers to transaction of interactions between people in a community that motivates the achievement of collective and personal goals. Last, *Shared emotional connectedness* which refers to feelings of

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cohesion one experiences in relation to being a member of a community and with others, and also including spiritual and cultural connections with important Beings in one's community (Chavis et al., 2008).

Method

Participants and Setting

In this study a sample of 489 adolescents participated, 233 (47.6%) were male and 256 (52.4%) female. Average age was 17 ($SD = 1.51$), with a range of 14 to 23 years. The majority of the participants reported Setswana as their home language, and they represented 93.0% of the total sample, 9 participants did not indicate their home language. Of the total sample 194 (39.7%) reported that they lived with both parents, 156 (31.9%) lived with their mothers only, 79 (16.2%) participants reported living with a significant other only, 21 (4.3%) participants lived with their fathers only, 20 (4.1%) reported not living with any of their biological parents, and 19 (3.9%) did not indicate with whom they live with. Regarding the socioeconomic status of the participants, 178 (36.4%) reported that a monthly government grant was the main source of their household income, 150 (30.7%) lived with an adult who was employed, 100 (20.4%) indicated that both monthly government grant and an employment of an adult in their families constituted the main source of income, 43 (8.8%) of the participants reported "other" as a source of their family income which could include self-employment of the parent(s) or adult(s) informal income generation activities category for household income and 18 (3.7%) participants did not indicate their source of family income.

Measuring instruments

Sense of Community: Sense of Community Index-2 (SCI-2; Chavis, Lee, & Acosta, 2008), is a 24-item measure that measures an individual's perception of his/her community.

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Respondents indicate on a 4-point Likert response format the extent to which they do not agree (1) to completely agree (4) on all items. The scale is composed of four subscales namely; Reinforcement of Needs (SCIRN), Membership (SCIM), Influence (SCII), and Shared Emotional Connections (SCISEC). Chavis et al. (2008) reported excellent psychometric properties, including Cronbach's alpha coefficients of .94 for the total scale and .79 to .86 for the subscales in a diverse American sample. No South African studies applying the SCI-2 scale could be found. In the present study, the scale obtained a CFA-based reliability index of .95.

The Balanced Measure of Psychological Needs (Sheldon & Hilpert, 2012). The BMPN scale was used in this study to operationalize the dependent variable. It is described in Study 1. In the study 2 sample the BMPN yielded a CFA-based reliability index of .76.

Data analysis

Mean scores and inter-scale correlations were reported for the three factors of basic psychological needs satisfaction according to the BMPN scale (Sheldon & Hilpert, 2012), and the four factors of sense of community according to the SCI-2 (Chavis et al., 2008). Regression analyses were performed with sense of community factors as independent variables and indicators of the satisfaction of relatedness, competence and autonomy as dependent variables. The Statistical Package for Social Sciences (SPSS; IBM Corporation, 2013) and Mplus (Muthén & Muthén, 1998-2012) were used to perform these analyses. Structural equation models in Mplus (Muthén & Muthén, 1998-2012) was used to illustrate the models that depict direct influences between sense of community and basic needs. Twelve competing models were tested and reported from which one was chosen to illustrate direct effects from sense of community to basic psychological needs. The fit indices: Chi-square (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and

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Weighted Root Mean Square Residuals (WRMR) were used to report the fit of these models. Good fit is expected to be demonstrated by CFI of above .90, TLI of above .90 and lower χ^2 values (Byrne, 2012; Kline, 2011). Direct effects as an indication of the influence of the independent on the dependent variables were shown by the significance of standardised regression coefficients (β) as demonstrated by probability values and confidence intervals

Results

Mean scores and inter-scale correlations

With the midpoint of 9.00 and range of between 0.00 and 18.00 for the sense of community sub-scales, this group scored below midpoint (SCI-RN and SCI-M) and about midpoint (SCI-I and SCI-SEC). All the subscales for basic needs attained relatively high scores, in the upper third of the possible range. Inter-scale bivariate correlations yielded positive and significant associations, with large effect sizes, among the Sense of community subscales. Correlations between sense of community and basic psychological needs has small effect sizes, and ranged between -.01 (SCI-M and BMPN-R) and .13 (SCI-RN and BMPN-C), where only the correlation between BMPN-C and SCI-RN was significant.

< Table 4 approximately here >

Determining model fit

Twelve structural models were compared in order to investigate the direct influence of sense of community (Independent variable) on the satisfaction of the psychological needs (Dependent variables). In the first model four dimensions of the sense of community were regressed on the three basic psychological needs as primary level latent variables. Model 2 consisted of sense of community as second-order latent variable which was regressed on basic

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psychological needs as first-order latent variables. In the models 3, 4, 5 and 6 the sense of community dimensions, individually and separately, were first-order latent variables which were regressed on basic psychological needs as a second-order latent variable. Alternative models 3a, 4a, 5a, 6a were tested with each of the sense of community subscales as first-order latent variables (individually) and were regressed on the basic psychological needs which were first-order latent variables. Last, model 8 consisted of sense of community as second-order latent variable which was regressed on the three needs as first-order latent variables. Model 7 consisted of sense of community subscales as first-order latent variables which were regressed on basic psychological needs as a second-order latent variable.

< Table 5 approximately here >

All the tested measurement models attained CFI and TLI values of above .90, and lower Chi-square (χ^2) values indicating good fit (cf. Bryne, 2012; Kline, 2011), model 3 was the preferred one on the basis of parsimony. In this model 3 (see Figure 2), sense of community dimensions were first-order latent variables which were regressed on the basic psychological needs as first-order latent variables, this model obtained fit statistics: $\chi^2 = 124.145$, (86), CFI = .977, TLI = .974, RMSEA = .030, and WRMR = 0.823.

< Table 6 approximately here >

< Figure 2 approximately here >

The individual regression coefficient indicating the direct effects of sense of community dimensions, namely Membership, Reinforcement of Needs, Influence, and Shared Emotional Connectedness, on Relatedness, Competence, and Autonomy are reported in Table 7. None of

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the four dimensions of sense of community had a significant direct influence on any of the basic psychological needs.

< Table 7 approximately here >

Discussion

The aim of study 2 was to investigate the influence of sense of community on basic psychological needs satisfaction. Guided by the hypothesis that sense of community would influence the satisfaction of basic psychological needs, structural models were tested and examined for direct effects. Community functioning denoted patterns of reciprocal interactions in social or physical contexts outside home and school where adolescents and their peers spend time interacting and socializing (Zarrett & Eccles, 2006) and was operationalized using the Sense of Community Index-2 (SCI-2; Chavis et al., 2008). The main finding was that none of the four dimensions of sense of community had an influence on the satisfaction of basic psychological needs. The data showed no direct influence of sense of community on the satisfaction of their basic psychological needs.

The findings of this study 2 were not expected. It was expected that aspects of sense of community would predict the satisfaction of basic psychological needs. This expectation makes sense on the basis that sense of community represents the degree of group effort and social cohesion that would engage one in prosocial and reciprocal interactions in a community setting. The results of this study also show that the participants scored relatively low on dimensions of sense of community, possibly indicating that they do not feel a sense of membership and influence in their communities. They also do not feel that they share emotional

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connection with their communities and that their communities do not support or reinforce their needs.

Sense of community and relatedness. Sense of community had no direct effect on the satisfaction of the need for relatedness. Relatedness represents an individual's need to have relationships with other people and to feel that in these relationships one is cared for and care for others reciprocally. When this need is satisfied, adolescents are able to initiate and maintain relationships without being overly dependent on others; they can trust others and develop socially and emotionally (Killen & Coplan, 2011). Lack of interest in others welfare could inhibit adolescents' expression of their need to relate and have meaningful associations with others (cf. Deci & Ryan, 2009). Lack of satisfaction of this need can result in sense of loneliness, isolation and social alienation, and can have negative effects on an individual's overall psychological health and social development (Ryan & Deci, 2000a; 2000b).

Sense of community and competence. Sense of community had no influence on the satisfaction of competence in this study. The need for competence among adolescents centre on their efficacious beliefs of "I can and I am capable". When appropriately supported in their neighbourhoods, adolescents engage in social and civic activities where they exercise their efficacy beliefs. Consequently, their behaviour becomes encouraged because it is good, socially acceptable and beneficial for the greater good of their neighbourhood. Inversely, when their community do not provide support for their need for competence by offering them opportunities to effect positive change, they would feel ineffective. Support from adults who are in contact with adolescents in their communities could be thought of as analogous to a barometer that indicates to adolescents that they are doing well and that they can achieve their desired outcomes (Besell, 2007).

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Sense of community and autonomy. Sense of community had no influence on the satisfaction of the need for autonomy, with all four components showing no significant direct effects. This need concerns choice and an individual's ownership of his/her behaviour. When their choices are restricted or controlled externally via psychological control, rules and regulations and by dysfunctional or disrupted social order mechanisms adolescents feel compelled instead of intrinsically motivated to engage in behaviour and results in a lack of interest and perceive activities as meaningless (cf. Ryan & Deci, 2000a). In their interactions and relationships with others in their community, adolescents want to express choice over what and how they can contribute in these neighbourhoods. In these interactions they need to feel that they are choicefully engaged and not coerced and that their opinions matter in the discourse in these relationships. When their choices are respected and they feel that they contribute positively in their relationships and are moved by a sense of willingness to pursue self-determined goals (Deci & Ryan, 2000)

As Ryan and Deci (2000a; 2000b) had indicated, socio-environment and context ought to play a role in the satisfaction of needs. Conditions in one's socio-environmental context that support these needs, would lead to their satisfaction whereas conditions that inhibit their expression would lead to their thwarting and frustration. Given that family functioning influenced the satisfaction of basic needs (Study 1) and that sense of community was not associated with nor did it predict basic needs satisfaction (Study 2), it made sense to test for moderation using all three constructs. The hypothesis informing Study 3 (moderation investigation) is that family functioning would interact with sense of community to affect the impact on basic psychological needs. Therefore Study 3 examines family functioning as a moderator.

Study 3:**Family Functioning as a Moderator between Sense of Community and Basic Need Satisfaction**

From an ecological systems theory (Bronfenbrenner, 1986), it is understood that multiple factors including an individual's own unique bio-psychological makeup and broader social ecology interact and play an important role in understanding and explaining behaviour. Macrosystems, mesosystems, and microsystems cannot individually and separately explain Adolescents' development outcomes as they are in constant interaction with each other (Bronfenbrenner, 1986; Darling, 2007). Reciprocal patterns of interaction between an individual and his/her broader social ecology influence behaviour and health via the mutual transactions and level of influence in these settings. The distress experienced in various social spaces can be buffered, among others, by family (Buka, Stichick, Birdthistle, & Earls, 2001; Gorman-Smith, Henry, & Tolan, 2004; Sheidow, Gorman-Smith, Tolan, & Henry, 2001; Overstreet, 2001). Families with high levels of emotional closeness, parental support and monitoring, and family cohesion tend to be better at supporting their adolescent children (Proctor, 2006; Sheidow, Gorman-Smith, Tolan, & Henry, 2001). Such families are able to help their adolescents in gaining strength to overcome often overwhelming experiences in their lives (Ungar, 2012; Walsh, 2005).

Research on parental monitoring and involvement (Banerjee, Harrell, Johnson, 2011), emotional warmth (Walsh, 2006) and overall positive family functioning (Waslsh, 2012) has shown support and evidence that family nurtures adolescents' growth and development. On the other hand negative family function has a detrimental effect on the satisfaction of the needs (cf.

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Sarmiento & Cardemil, 2009). From a basic psychological needs theory viewpoint, families that satisfy these needs among their adolescents contribute directly to their need satisfaction, motivation and well-being outcomes (Deci & Ryan, 2000). Empirical evidence has shown that the living environments that shows support for and satisfy the needs among adolescents lead to their subjective well-being (Şimşek & Demir, 2012), and decreased incidents of aggressive behaviours (Kuzucu & Şimşek, 2013). Environment within which an individual functions has been shown to play a role in the satisfaction of the three needs (Ryan & Deci, 2000a; 2000b; Kasser, Koestner, Lokes, 2002).

Quality of family interaction and functioning between an adolescent and his/her family is important (Epstein et al., 1983) for their positive developmental outcomes. For this study it is argued that family functioning would moderate adolescents' satisfaction of their basic psychological needs in community settings. In their interaction, both family functioning and sense of community would contribute uniquely to the satisfaction of the needs. When this relationship is established, families would be a distinguishing factor that has influence on the satisfaction of the needs of adolescents. On this basis adolescents from such families would benefit via psychological needs satisfaction, whereas those who experience dissatisfaction of their needs would not.

Method

Participants and Setting

Participants in studies 1 and 2 formed a sample for this study ($n = 977$). In this study 460 (47.1%) were male and 515 (52.7) female, 2 participants did not report their gender. Average age was 17 ($SD = 1.51$), with a range of 14 to 23 years. The majority of the participants reported Setswana as their home language and represented 912 (93.3%), 16 participants did not indicate

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their home language. Of the total sample 387 (39.6%) reported that they lived with both parents, 301 (30.8%) lived with their mothers, 167 (17.1%) participants reported living with a significant other which could be their grandparents or extended family members, 43 (4.4%) reported living only with their fathers, 44 (4.5%) did not live with any parent, and 33(3.6%) did not indicate with whom they lived with. Regarding the socioeconomic status of the participants, 350 (35.8%) reported that a monthly government grant was the main source of their household income, 296 (30.3%) lived with an adult who was employed, 205 (21.0%) indicated that both monthly government grant and an employment of an adult in their families constituted the main source of income, 81 (8.3%) of the participants reported “other” as a source of their family income, 45 (4.6%) participants did not indicate their source of family income.

Measuring instruments

Basic psychological needs. Balanced Measure of Psychological Needs scale (BMPN; Sheldon & Hilpert, 2012) as described in Study 1 was used in the present study. In this study 3, a total sample of 977 adolescents participated and it attained a reliability index of .74.

Sense of community. The measures Sense of Community-Index 2 (SCI-2; Chavis, Lee, & Acosta, 2008) as described in Study 2 was used in the present study. In this study 3, with a total sample of 977 it attained a reliability index of .92

Family functioning. Family Assessment Device-General Family Functioning subscale (FAD-GFF; Epstein et al., 1983) as described in Study 1 was used in the present study. In study 3 it obtained a CFA-based reliability of .57.

Data Analysis

Moderation analysis was performed through SEM using Mplus (Muthén & Muthén, 1998-2012). The moderating variable was family functioning (FAD-GFF), and it was allowed to

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interact with components of Sense of Community to predict the satisfaction of basic psychological needs. The XWITH command in Mplus was used to specify the interaction terms involving the independent variables (SCIRN, SCII, SCIM and SCISEC) and the moderating variable, family (FAD-GFF). All indicator variables were continuous. Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were used to determine model fit. The AIC and BIC are the two indexes that are provided by Mplus when interaction terms are included (Jutengre, Kerr, & Stattin, 2011). The significance of Beta values on the basis of probability values and 95% confidence intervals, for the interaction effects were examined as an indication of moderation.

Results

Descriptive statistics show that the scores for the FAD-GFF had a midpoint of 19.40 and range of between 9.00 and 33.00, scores for Sense of Community are below the midpoint (SCIRN, SCIM and SCII) and at the midpoint (SCISEC). Within the possible range of 3 to 15, basic psychological needs scored 11.89 (BMPNR), 10.65 (BMPNC) and 11.61 (BMPNA). From the inter-scale correlation matrix, results show that poor family functioning was negatively related with all sense of community and needs satisfaction subscales. In addition, all needs were positively correlated with sense of community, but some of the relationships were not significant. The relationship between Reinforcement of needs (SCI-RN) and Need for relatedness (BMPN-R) was not statistically significant. Need for autonomy's (BMPN-A) relationships with Influence (SCI-I), Shared emotional connectedness (SCI-SEC) and Reinforcement of needs (SCI-RN) were not significant.

< Table 8 approximately here >

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Testing for moderation

Six structural models were tested in order to test for moderation in this study. Model 1 consisted of $INT = SCI \times WITH \text{ FAD-GFF}$, model 2 was $INT = SCIM \times WITH \text{ FAD-GFF}$, model 3 comprised $INT = SCIRN \times WITH \text{ FAD-GFF}$, model 4 was $INT = SCII \times WITH \text{ FAD-GFF}$, model 5 comprised $INT = SCISEC \times WITH \text{ FAD-GFF}$ and $INT = SCI \times WITH \text{ FAD-GFF}$ for model 6. Table 9 presents model fit indexes AIC and BIC for the six models.

< Table 9 approximately here >

The individual regression coefficients indicating the interaction between sense of community and family in predicting and basic psychological needs dimensions of relatedness, competence, and autonomy are reported in Table 10. None of the interaction effects were significant and thus no moderation could be proven.

< Table 10 approximately here >

Discussion

The aim of study 3 was to investigate whether family functioning would moderate the relationship between sense of community and basic psychological needs satisfaction. Family functioning as a moderator variable was operationalized using the General Family Functioning subscale of the Family Assessment Device (FAD-GFF; Epstein et al., 1983), it was allowed to interact with Sense of Community-Index 2 (SCI2; Chavis et al., 2008) as the independent variable. The dependent variable was basic psychological needs and operationalized using the Balanced Measure of Psychological Needs scale (BMPN; Hilpert & Sheldon, 2012). The main findings showed that family functioning did not moderate the relationship between sense of community and the satisfaction of the basic psychological needs. This means that the influence of sense of community on satisfaction of basic psychological needs does not change on the

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basis of the quality of family functioning, that the adolescent comes from.

Sense of community and relatedness. In this study family functioning did not moderate the relationship between sense of community and the satisfaction of relatedness. No interaction effects were found. When family moderates the effects of community's dissatisfaction of adolescents' basic psychological needs, adolescents' should experience a sense of connectedness within their families that allow them to relate with others. In such families adolescents would be allowed to talk about their concerns, be listened to and appropriately guided so that they feel a sense of connectedness with adults in their lives in the families (Kagitcibasi, 2005). This experience would in return bolster their self-efficacy. Although they may not experience a sense of relation within their community, the family can provide ways through which this need is satisfied. It is also possible that the dissatisfaction of this need can hinder well-being as adolescents tend to spend time in outside environments in the company of others (Steinberg et al., 2011).

Sense of community and competence. Family, in this study, did not moderate the relationship between sense of community and the satisfaction of competence. No interaction effects were found. Neighbourhoods that do not function in ways that help adolescents achieve their goals pose the risk of dissatisfying their need for competence, to feel that they can effect change in their communities (cf. Ryan & Deci, 2000a). Families can make a contribution by guiding and helping adolescents towards exercising and applying their strengths and abilities in their areas of growth in other settings of their lives. In so doing, adolescents would come out of families poised that they can and are capable of effecting change in their environments.

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Sense of community and autonomy. Family, in this study, did not moderate the relationship between sense of community and the satisfaction of autonomy. No interaction effects were found. If neighbourhoods where adolescents spend time dissatisfy their need for autonomy and when they in families have to do academic activities, or be assigned to chores or do other things as deemed necessary by the family, their need is further dissatisfied allowing for moderation not to occur. When families moderate the association between community and family, they would satisfy this need and help adolescent pursue self-determined goals.

In summing up, the expectation that the quality of family functioning would be a distinguishing factor in how perceptions of sense of community influence satisfaction of basic psychological needs was not supported by the data. The interaction between family functioning and sense of community did not have an influence on the satisfaction of psychological needs. Families that do not generally function well pose as a threat to developmental outcomes and would not support basic psychological needs of adolescents (Epstein et al., 1983). The relationship between an individual and his/her immediate social ecology should such be that an individual experiences feelings of being supported in their environments (Ryan & Deci, 2000a; 2000b). Lack of this positive and supportive interaction is detrimental for needs satisfaction.

GENERAL DISCUSSION

The general aim of this three phase study was to examine the dynamic relationships between adolescents' living context and the satisfaction of the basic psychological needs. The first study specifically investigated the influence of family functioning on basic psychological needs satisfaction. The General Family Functioning subscale of the Family Assessment Device (Epstein et al., 1983) was used as an operationalization of family functioning. The second study investigated the influence of sense of community on the satisfaction of basic psychological

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needs, it used Sense of Community-Index 2 as an operationalization of sense of community functioning. Last, study 3 investigated family functioning as a moderator with sense of community in influencing basic psychological needs satisfaction. For each of the three studies structural equation modelling in Mplus was used to test the relationships between the measured constructs. The three studies indicated that although, family had a direct influence on basic psychological needs satisfaction, sense of community and their interaction reciprocal did not.

Families are a part of broader social ecology that plays a role in nurturing and promoting Adolescents' development and well-being (Darling, 2007). Families are often flexible and not rigid and can be influenced by dynamics, social conditions and ills facing neighbourhoods where they are located (Strong et al., 2008). Through human interaction and the influence of media, neighbourhood conditions can infiltrate into families (Strong et al., 2008), thus either contributing to their positive functioning or worsening their functioning (cf. Leventhal & Brooks-Gunn, 2003a; 2003b; Walsh, 2012). At family level factors such as parental presence, family socioeconomic status, parenting styles and overall family functioning are known to have an impact on developmental outcomes among adolescents (Abbott et al., 2005; Steinberg et al., 2011; Zarret & Eccles, 2006; Walsh, 2006; 2012). Thus, there is an intertwined dynamic relationship between family and community. Furthermore neighbourhood characteristics such as type of area (rural or urban), availability and access to health care services, schools and other recreational sites contribute differently to well-being outcomes among adolescents. (Leventhal & Brooks-Gunn, 2003a; 2003b).

The development and growth of adolescents out of families, interaction and functioning in their communities is a dynamic and multidimensional process (Steinberg & Morris, 2011). Adolescents' perceptions of their communities based on their functioning is a result of their

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interaction, participating and relating with adults in their communities (cf. Cicognani et al., 2008).

The findings of the present studies provided evidence that socio-environmental contexts partially influence the satisfaction of the basic psychological needs. Need satisfying environments support people to function in ways that are congruent with their inherently positive nature; that is they thrive towards attaining self-determined goals, applying and utilising their talents in their areas of growth (Ryan & Deci, 2000a; 2000b; Deci & Ryan, 2009). In contrast, need thwarting or frustrating environments lead to people functioning in ways that are incongruent with their basic tendencies towards self-actualization (cf. Jang, Reeve, Ryan & Kim, 2009).

Not only was the perception of poor family functioning negatively related to need satisfaction, but it influenced it negatively. Culture and dynamics within socio-environmental contexts also influence how needs are satisfied or which needs are more likely to be preferred over others (Ryan & Deci, 2000a; 2000b; Milyavskaya & Koestner, 2011). It is noteworthy to recognize that this study was conducted among a sample of African adolescents. By virtue of these adolescents being of African heritage, it cannot be ignored that values with which they are raised impact their experience of daily lives and how they function in their neighbourhoods and communities.

Contribution of the study to psychosocial sciences: The present study contributes to Psychology through identifying and mapping the pathways of factors that lead to satisfaction of basic psychological needs among adolescents in their living contexts. The findings from this study can inform how family functioning and sense of community are involved in nurturing and promoting basic psychological need satisfaction among South African adolescents. Such a

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finding will inform mental health and educational professionals who help adolescents. According to Ryan and Deci (2000a; 2000b), socio-environmental contexts play a key role in the satisfaction of psychological needs, the satisfaction of which leads to well-being whereas the thwarting or frustrating of needs lead to diminished functioning and even ill-being.

Limitations: First, the measures were available in English which is not the mother-tongue of the participants. This study was exclusively quantitative with a cross-sectional survey design, test-retest for determining the stability of the measures overtime was thus not possible. The participants were conveniently selected and the results cannot be generalized to all adolescents. All the measures used were self-report and relied on retrospection of past experiences. Last, although school context and its overall functioning has been associated with and found to contribute to adolescent psychological needs satisfaction and psychosocial well-being (cf. Tian, Chen, & Huebner, 2013), it was left out in this study.

Implications: First, practitioners working with adolescents can design interventions directed at guiding them towards identifying ways of expressing their psychological needs in culturally appropriate ways within their contexts of family and neighbourhood. Families raising adolescents can benefit equally from gaining skills necessary for optimizing their functioning based on the FAD (cf. Epstein., 1983). Last, these families could also benefit from gaining competencies on how to partner with adolescents towards the satisfaction of their psychological needs.

For counselling psychologists who consult adolescent clients, knowledge of the influence of primary social contexts on satisfaction of needs is important for interventions applied in motivation and general psychological well-being promotion. Moreover, counselling psychologists could benefit from using the basic psychological needs theory as a framework for

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understanding mental health and well-being outcomes and appropriately promoting them among adolescents.

Recommendations: Future research on the role of context on adolescents' psychological needs satisfaction should involve a more diverse sample from different living environments, urban and rural. Measurement tools and their item content should fit the educational level, linguistic capability and competence level for the participants. Qualitative research approach is often a benefit in order to gain an understanding of how they experience and understand well-being from their own psychosocial and cultural lenses. Specifically these studies should look at the dynamics of families and communities within which adolescents live and function, to understand the role of these contexts on daily experiences of adolescents' psychological needs satisfaction. Further research could be stimulated in areas such as positive youth development; there however remains a dearth of research on families in South Africa. Any study that looks at well-being of adolescents should first and foremost look at the context under which development takes place.

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Table 1

Mean scores, reliabilities, and inter-scale bivariate Pearson correlations for family functioning (N = 488)

	Range		Mean	SD	Correlations			
	Min	Max			GFF	BMPN-R	BMPN-C	BMPN-A
FAD-GFF	8.00	30.00	17.58	3.94	1			
BMPN-R	5.00	15.00	11.83	2.49	-.199**	1		
BMPN-C	3.00	15.00	10.39	2.54	-.197**	.327**	1	
BMPN-A	3.00	15.00	11.65	2.56	-.095	.336**	.327**	1

** Significance level = $p < 0.01$; FAD-GFF = Family Assessment Device-General Family Functioning, BMPN-R = Balanced Measure of Psychological Needs-Relatedness; BMPN-C = Balanced Measure of Psychological Needs-Competence; BMPN-A = Balanced Measure of Psychological Needs-Autonomy.

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Table 2

Measurement models for family functioning (N = 488)

Model	Fit indices					
	X ² (df)	P	RMSEA	CFI	TLI	WRMR
Model 1	336.90 (183)	.000	0.042	0.882	0.864	1.074
Model 2	217.96 (129)	.000	0.038	0.921	0.906	0.955
Model 3	345.60 (185)	.000	0.042	0.876	0.860	1.095
Model 4	226.70 (131)	.000	0.039	0.915	0.901	0.983

X² (df) = chi-square statistics; p = significance level (at $p < 0.01$); RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual.

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Table 3

Direct effects for family functioning based on the best model (N = 488)

Variable	Estimate	SE	Estimate/SE	Sig.	95% CI	
Relatedness	-0.378	0.066	-5.741	0.000	-1.123	-0.398
Competence	-0.469	0.083	-5.663	0.000	-0.968	-0.328
Autonomy	-0.207	0.077	-2.693	0.007	-0.370	-0.033

Estimate = Standard regression coefficient (β)

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Table 4

Mean scores, and inter-scale bivariate Pearson correlations for sense of community (N = 489)

	Range		Mean	SD	Correlations							
	Min	Max			SCI-RN	SCI-M	SCI-I	SCI-SEC	BMPN-R	BMPN-C	BMPN-A	
SCI-RN	.00	18.00	7.88	4.58	1							
SCI-M	.00	18.00	8.48	4.09	.71**	1						
SCI-I	.00	18.00	9.03	4.14	.70**	.65**	1					
SCI-SEC	.00	18.00	9.18	5.09	.73**	.72**	.76**	1				
BMPN-R	3.00	15.00	11.95	2.47	.05	-.01	.03	.05	1			
BMPN-C	3.00	15.00	10.90	2.43	.13**	.06	.05	.05	.26**	1		
BMPN-A	3.00	15.00	11.58	2.53	.05	.05	.02	.06	.35**	.32**	1	

** Significance level = $p < .01$; CI-RN = Sense of Community-Reinforcement of Needs; SCI-M = Sense of Community-Membership; SCI-I = Sense of Community-Influence; SCI-SEC = Sense of Community-Shared Emotional Connections; BMPN-R = Balanced Measure of Psychological Needs-Relatedness; BMPN-C = Balanced Measure of Psychological Needs-Competence; BMPN-A = Balanced Measure of Psychological Needs-Autonomy.

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Table 5

Description of measurement models in study 2 (N = 489)

Model	Description
Model 1	Four dimensions of the Sense of Community were regressed on the three basic psychological needs as primary level latent variables.
Model 2	Consisted of Sense of Community as second-order latent variable which was regressed on basic psychological needs as first-order latent variables
Model 3	Sense of Community Reinforcement of needs dimension as a first-order latent variable was regressed on basic psychological needs as a second-order latent variable
Model 3a	Reinforcement of Needs as a first-order latent variable was regressed on the basic psychological needs as first-order latent variables
Model 4	Sense of Community Membership dimension as first-order latent variable was regressed on basic psychological needs as a second-order latent variable
Model 4a	Membership as a first-order latent variable was regressed on the basic psychological needs as first-order latent variables
Model 5	Sense of Community dimension Influence as first-order latent variable was regressed on basic psychological needs as a second-order latent variable
Model 5a	Influence as a first-order latent variable was regressed on the basic psychological needs as first-order latent variables
Model 6	Sense of Community dimension Shared Emotional Connectedness as a first-order latent variable was regressed on basic psychological needs as a second-order latent variable
Model 6a	Shared Emotional Connections as a first-order latent variable was regressed on the basic psychological needs as first-order latent variables
Model 7	Four dimensions of the Sense of Community were regressed on the three basic psychological needs as second-order latent variables
Model 8	Sense of Community as second-order latent variable were regressed on the three basic psychological needs as primary level latent variables

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Table 6

Measurement models for Sense of Community (n = 489)

Model	Fit indices					
	X ² (df)	p	RMSEA	CFI	TLI	WRMR
Model 1	695.594 (474)	.000	0.031	0.977	0.974	0.970
Model 2	713.438 (487)	.000	0.031	0.976	0.974	1.020
Model 3	124.415 (86)	.004	0.030	0.977	0.972	0.823
Model 3a	109.914 (84)	.000	0.025	0.984	0.981	0.740
Model 4	132.961 (86)	.000	0.033	0.963	0.955	0.872
Model 4a	128.751 (84)	.001	0.033	0.965	0.956	0.836
Model 5	127.028 (86)	.002	0.031	0.964	0.956	0.841
Model 5a	119.975 (84)	.006	0.030	0.969	0.961	0.799
Model 6	100.708 (86)	.132	0.019	0.994	0.993	0.721
Model 6a	101.763 (84)	.091	0.021	0.993	0.991	0.703
Model 7	708.651 (482)	.000	0.031	0.976	.0974	1.011
Model 8	707.001 (485)	.000	0.031	0.977	0.975	0.983

X² (df) = chi-square statistics; p = significance level (at $p < 0.01$); RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual.

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Table 7

Direct effects basic psychological needs based on the best model 3 for Sense of community

(*N* = 489)

Dependent variable is need for Relatedness						
Variable	Estimate	SE	Estimate/SE	Sig.	95% CI	
SCIRN	0.677	0.780	0.867	0.36	-0.836	2.151
SCIM	-0.630	0.630	-0.999	0.318	-1.680	0.557
SCII	-1.597	2.784	-0.574	0.566	-6.724	3.703
SCISEC	1.581	2.577	0.618	0.536	-2.620	5.014
Dependent variable is need for Competence						
Variable	Estimate	SE	Estimate/SE	Sig.	95% CI	
SCIRN	0.655	0.520	1.260	0.208	-0.308	1.384
SCIM	-0.083	0.453	-0.184	0.854	-0.733	0.607
SCII	-0.018	1.704	-0.010	0.992	-2.68	2.659
SCISEC	0.340	1.510	-0.225	0.822	-2.114	1.679
Dependent variable is need for Autonomy						
Variable	Estimate	SE	Estimate/SE	Sig.	95% CI	
SCIRN	0.486	1.244	0.391	0.696	-0.697	1.042
SCIM	-0.138	1.001	-0.138	0.890	-0.687	0.597
SCII	-3.437	4.837	-0.711	0.477	-4.516	2.142
SCISEC	3.134	4.405	0.711	0.477	-1.549	3.281

Estimate = Standard regression coefficient (β); SCIRN = Sense of Community Index - Reinforcement of Needs, SCIM = Sense of Community Index - Membership, SCII = Sense of Community Index - Influence, SCISEC = Sense of Community Index - Shared Emotional Connections

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Table 8

Descriptive statistics and inter-scale correlations for study 3 (N = 977)

	Range		Mean	SD	Correlations								
	Min	Max			FAD-GFF	SCI-RN	SCI-M	SCI-I	SCI-SEC	BMPN-R	BMPN-C	BMPN-A	
FAD-GFF	9.00	33.00	19.40	4.22	1								
SCIRN	0	18	7.86	4.50	-.05	1							
SCIM	0	18	8.33	3.00	-.06	.69**	1						
SCII	0	18	8.87	4.19	-.05	.66**	.65**	1					
SCISEC	0	18	9.15	4.00	-.06	.69**	.69**	.78**	1				
BMPNR	3.00	15.00	11.89	2.48	-.15**	.80	.08*	.11**	.11**	1			
BMPNC	3.00	15.00	10.65	2.50	-.1**	.13**	.13**	.11**	.09*	.20**	1		
BMPNA	3.00	15.00	11.61	2.54	-0.6	.05	.09**	.05	.05	.34**	.32**	1	

** Significance level = $p < 0.01$; * $p < 0.05$; FAD-GFF = Family Assessment Device-General Family Functioning; SCIRN = Sense of Community Index - Reinforcement of Needs, SCIM = Sense of Community Index - Membership, SCII = Sense of Community Index - Influence, SCISEC = Sense of Community Index - Shared Emotional Connections; BMPN-R = Balanced Measure of Psychological Needs-Relatedness; BMPN-C = Balanced Measure of Psychological Needs-Competence; BMPN-A = Balanced Measure of Psychological Needs-Autonomy.

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Table 9

Measurement models for interaction in study 3 (N = 977)

Model	Fit indices	
	AIC	BIC
Model 1	110964.377	111633.551
Model 2	110967.099	111675.349
Model 3	110968.150	111676.401
Model 4	110966.851	111675.101
Model 5	110966.880	111675.130
Model 6	110965.285	111663.767

AIC = Akaike Information Criteria; BIC = Bayers Information Criterion; Model 1: INT = SCI XWITH FAD-GFF; model 2: INT = SCIM XWITH FAD-GFF; model 3: INT = SCIRN XWITH FAD-GFF; model 4: INT = SCII XWITH FAD-GFF; model 5: INT = SCISEC XWITH FAD-GFF; mode 6: SCI XWITH FAD-GFF

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Table 10

Interaction effects with FAD-GFF as the moderator variable for study 3 (N = 977)

Dependent variable is BMPN					
	IV	Est.	SE.	Est./S.E	Sig
Model 1	SCI	0.391	0.274	1.427	0.154
Model 2	SCIM	0.595	0.443	1.346	0.178
Model 3	SCRN	0.532	0.443	1.175	0.240
Model 4	SCII	0.595	0.431	1.380	0.168
Model 5	SCSEC	0.431	0.301	1.429	0.153
Significance level = $p < 0.01$					
Dependent variable is BMPN-R					
Model 6	SCI	0.273	0.171	1.597	0.110
Significance level = $p < 0.01$					
Dependent variable is BMPN-C					
Model 6	SCI	0.136	0.172	0.790	0.430
Significance level = $p < 0.01$					
Dependent variable is BMPN-A					
Model 6	SCI	0.102	0.102	1.001	0.317
Significance level = $p < 0.01$					

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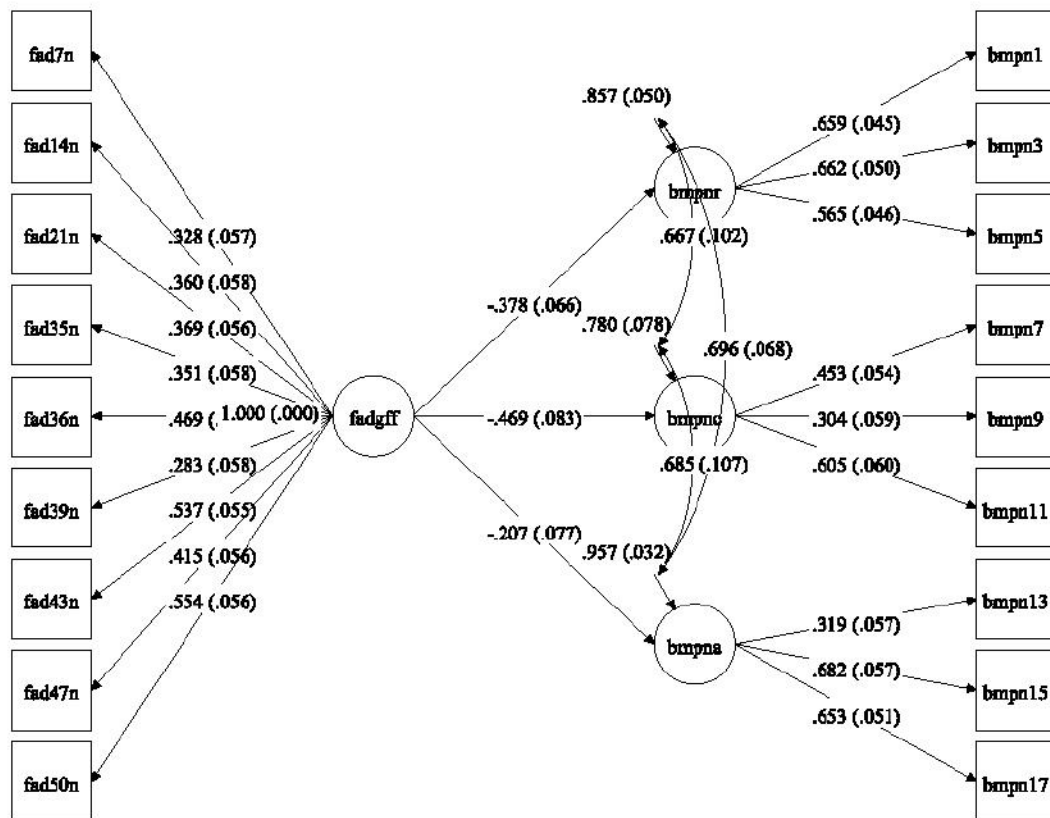


Figure 1

The preferred model for study 1 (N = 488)

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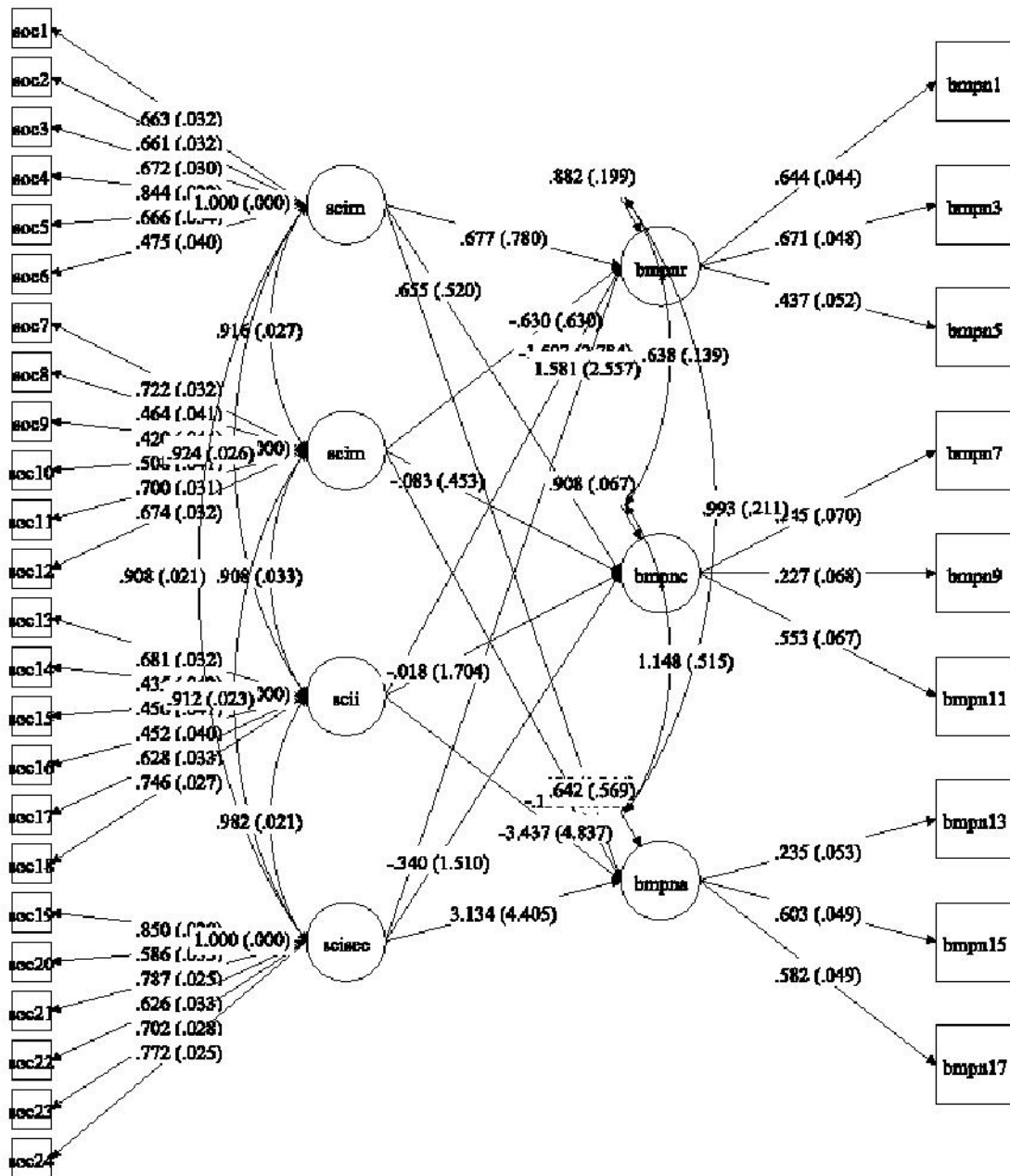


Figure 2

The preferred model for study 2 (N = 489)