EXAMINING THE RELATIONSHIPS BETWEEN THE SATISFACTION OF BASIC
PSYCHOLOGICAL NEEDS, EMPLOYEE WELL-BEING, & COMMITMENT

By

DAVID A. JENKINS B.A. (HONOURS)

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Abstract

According to Self Determination Theory (SDT) there exist just three basic psychological needs: competence, relatedness and autonomy, that foster intrinsic motivation and well-being, in any domain of life (Deci & Ryan, 1985b, Ryan & Deci, 2000). If this is the case, then one might expect that the degree to which these needs are satisfied at work should predict job satisfaction and performance. While prior research indicates this to be the case (Ilardi *et al.*, 1993, Baard *et al.*, 2004), little attention has been paid to the relationship between the three needs and organizational commitment. Affective organizational commitment, which describes an attachment to the organization, is highly desirable by virtue of links with valuable outcomes including performance, absenteeism and turnover (e.g., Allen & Meyer, 1996). Job satisfaction has been implicated as a predictor of affective commitment (Dougherty *et al.*, 1985). Moreover, Deci and Ryan (2000) suggest that competence, relatedness and autonomy are important in forming attachment in *any* relationship. With an eye to merging SDT with industrial-organizational research centered on organizational commitment, the study sought to test the relationships between the satisfaction of the three needs at work, job satisfaction, life satisfaction and affective commitment among Naval Reservists employed full and part-time across the country. As hypothesized, each need accounted for significant unique variance in job satisfaction, and, with the exception of autonomy, in life satisfaction and commitment also. In addition, job satisfaction was shown to partially mediate the relationship between need satisfaction and both life satisfaction and commitment. Overall the present study provides additional evidence as to the pervasiveness of the three needs and suggests that providing a work environment conducive to their satisfaction is a win-win proposition for employers and employees.

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Introduction

What makes a job truly enjoyable? Likely criteria include such things as pay, benefits, tolerable hours, interesting work, challenge, latitude to make decisions and likeable co-workers. But is it possible to distill the most basic criteria from the long list of possible perks and doleful duties? Is it possible to uncover a few basic criteria common to clerical, manual, service, technical and managerial positions that largely determine the extent to which people are satisfied with their jobs and committed to their employer? According to Self-Determination Theory (SDT) there exist just three basic psychological needs: competence, relatedness and autonomy that foster well-being and intrinsic motivation in any domain of life (Deci & Ryan, 1985b, Ryan & Deci, 2000). If this is the case, then it seems reasonable to expect that the satisfaction of these needs at work should predict job satisfaction (Ilardi *et al.*, 1993), performance (Kasser *et al.*, 1992), and organizational commitment.

In a study about work it is wise to consider both the interests of the employer and the employee. In this case, the central outcome for the employee is life satisfaction, and for the employer, commitment, a construct that has demonstrated sizeable relationships with other valuable outcomes including absenteeism (e.g., Hackett *et al.*, 1994), performance (e.g., Konovsky & Cropanzano, 1991) and turnover (e.g., Allen & Meyer, 1996). If it can be established that competence, relatedness and autonomy at work predict commitment and well-being, one would expect that a work environment conducive to their satisfaction should foster a happier, more committed workforce, a win – win proposition for employers and employees.

In brief, the research project outlined below examined the relationships between satisfaction of the three needs at work, job satisfaction, life satisfaction and organizational commitment. It was hypothesized that meeting the basic needs at work would contribute to job satisfaction, which, in turn, would contribute to both life satisfaction and commitment.

Three Basic Psychological Needs

Competence refers to a sense of being capable and proficient, relatedness to a sense of being intimately connected with others, and autonomy, to a sense of “endorsing one’s actions at the highest level of reflection” (Ryan, Kuhl & Deci, 1997, p. 708). Together competence, relatedness and autonomy are appealing in their simplicity and pervasiveness. In plain language, the existence of these three basic psychological needs would imply that, to be happy, a person must believe that they have a close friend and something worthwhile to do that they are good at.

Colloquially the term need is often used to refer to strong desire (e.g. I need a new car) or something critical to achieving some outcome (e.g. I need to borrow some money to pay rent). In SDT however, psychological needs refer to “innate psychological nutriments that are essential for ongoing psychological growth, integrity and well-being” (Deci & Ryan, 2000, p. 229), a definition consistent with an organismic approach to studying psychological needs (Reeve, 2001). So, according to SDT, the three needs are essential to integrity and well-being and, unlike social needs, acquired through upbringing, competence, relatedness and autonomy are considered innate. Consequently,

while their salience and expression may vary depending on the individual and culture in question, they are considered to be common to the human experience (Ryan, 1995).

If competence, relatedness and autonomy are indeed basic needs, as SDT suggests, one would expect people to expend a great deal of effort in pursuit of activities that lead to their satisfaction. One would also expect people would be happier at times when they are satisfying these needs than at times when their needs are being thwarted. Likewise one would expect that those people who, on average, are more successful in satisfying the three needs would, on average, evidence greater well-being. If the needs truly are innate, then one would expect them to predict well-being no matter the age or background of the individual in question. In addition, one would expect that competence, relatedness and autonomy would appear frequently in psychological theory and research.

Research predating SDT has highlighted the importance of the three needs (e.g., Heider, 1958; Sullivan, 1953; White, 1959). Parallels easily drawn with other constructs and theories point to the pervasiveness of the three needs. As suggested by the work introduced below, competence, relatedness and autonomy may be considered themes in psychological theory and research, appearing time and again in various guises.

White (1959) specified that a strong sense of competence requires success at optimally challenging tasks, and the attainment of desired outcomes. Constructs similar to competence include achievement, effectance, efficacy and mastery. Self-efficacy refers to beliefs about one's capacity to succeed in particular situations (Bandura, 1986). A person's general sense of being able (or unable) to interact successfully with the environment has been termed effectance motivation (Harter, 1978). Mastery describes a process of becoming increasingly capable at an activity. McClelland, Atkinson, Clark and

Lowell (1953) refer to achievement motivation as the desire to compete with a standard of excellence and succeed. Ames and Archer (1988) specify that there are two types of achievement goals: those focused on performance and on mastery. Performance goals are those in which the individual attempts to prove or exhibit *competence*, whereas with mastery goals the individual seeks to become more *competent*. So, regardless of whether the individual is focused on performance or mastery, a sense of competence is the desired end-state. It is evident from these various definitions that, core to achievement, competence, effectance, efficacy and mastery is the degree to which people expect to be and perceive that they are successful in their endeavours.

Sullivan (1953) described relatedness as the need to have close emotional bonds and feel intimately connected with others. Concepts akin to relatedness include affiliation, communion, connectedness, intimacy, love and belonging. Atkinson, Heyns and Veroff (1954) describe the need for affiliation as the desire to establish, maintain or restore positive relationships with others. Early formulations of Attachment Theory assumed a fundamental need to have close connections with others (Bowlby, 1958). Maslow (1954), in presenting a five-tiered hierarchy of physiological and psychological needs, argued that people seek love and belongingness before concerning themselves with esteem or self-actualization. McAdams (1980) referred to intimacy motivation as a willingness to experience warm, close exchanges with others. Bauer and McAdams (2000) specify that, in life stories, relatedness is reflected in the common theme of communion. As with competence, these various approaches suggest that theorists have, for some time, been examining various manifestations of a single pervasive human tendency.

DeCharms (1968,1976) referred to autonomy as personal causation and used the terms origins and pawns to describe individuals whose behaviour emanates from within (origins) as opposed to emanating from without (pawns). Heider (1958) described a sense of autonomy as an internal perceived locus of causality. Individuals engaging in activities of their own volition do so because they have internalized the value of those activities, and they perceive themselves as the origin of their own behaviour. Autonomy is also central to Reactance Theory (Brehm, 1966). According to Reactance Theory, when an individual had expected choice but is denied that choice an individual is likely to experience “reactance” or becoming more active, or even hostile, presumably in response to the need for autonomy being thwarted (Wortman & Brehm, 1975).

Another parallel can be drawn between autonomy and the much touted value of freedom. It is no great feat, in western cultures at any rate, to convince people that being free to pursue one’s hopes and dreams is crucial to well-being. But recall that, in SDT, autonomy refers to “endorsing one’s actions at the highest level of reflection” (Ryan, Kuhl & Deci, 1997, p. 708). Accordingly a sense of autonomy requires more than freedom from external pressures, it implies a sense of purpose, of perceiving value in one’s actions. The nihilistic teenager who consumes forty hours of television per week may be quite free and yet experience little autonomy. That is, an individual may be relatively free from external pressure and yet fail to find purpose in life.

As with freedom it is important to distinguish autonomy from both individualism and independence. An individual may internalize collectivist values and be autonomously, intrinsically motivated to act for the benefit of the collective (Chirkov *et*

al., 2003). Conversely an individual may be extrinsically motivated to pursue individualistic values, feeling pressured to become wealthy, for instance.

But while important distinctions do exist between the various concepts introduced above, it is clear that researchers have been extensively examining common human ambitions to feel capable, connected and engaged in worthwhile activity of their own accord.

As mentioned earlier, one criterion for competence, relatedness and autonomy being basic needs would be that people exert a great deal of effort pursuing activities that lead to their satisfaction. There exists ample historical evidence that people tend to challenge themselves, even by competing against otherwise meaningless records (e.g. pie eating), that people tend to seek out and solidify social ties (e.g. marriage, clubs), and that people who see themselves as oppressed tend to resist and rebel. And there exists also empirical evidence that people tend to display greater motivation when engaged in activities that offer a sense of competence, relatedness and autonomy. Among schoolchildren, the satisfaction of basic needs in school-life has been found to be negatively related to academic procrastination (Nadeau, Senecal & Guay, 2003). Similarly, in a study of urban African American students, those reporting higher competence, relatedness and autonomy were shown to be more engaged and, three years later, those who had reported higher engagement were more likely to have remained in school (Connel *et al.*, 1995). As such people seem to be particularly motivated to engage in activities that offer a sense of competence, relatedness and autonomy.

Of course individuals may exert a great deal of effort in pursuit of acquired needs or desires like wealth, toiling away day after day at the office, while neglecting their

personal relationships, for instance. The principle evidence for the basic or fundamental nature of competence, relatedness and autonomy is the extent to which they tend to be associated with well-being. A substantial body of research illustrates that experiences of competence, relatedness and autonomy are tied to well-being both between persons, and to fluctuations in well-being within persons (e.g., Reis *et al.*, 2000, Gagné *et al.*, 2003).

Gagné, Ryan and Bargman (2003) found that, among gymnasts, daily experiences of need satisfaction were associated with fluctuations in well-being. Likewise Reis, Sheldon, Gable, Roscoe and Ryan (2000) asked students to complete daily diaries and measures of autonomy, competence, relatedness and well-being (operationalized as vitality, symptoms of illness, positive and negative affect). In day-level analyses, controlling for average levels of well-being and the previous day's outcomes, all three needs were significantly associated with well-being. Further, the authors found that both trait and day-level measures of need satisfaction predicted well-being independently of one another. The finding that both trait measures (i.e. between person) and day-to-day fluctuations in need satisfaction are tied to differences in well-being offers additional evidence that experiences of competence, relatedness and autonomy are nutrients necessary for well-being.

Lending support to the argument that activities fostering a sense of competence, relatedness and autonomy are particularly enjoyable, Sheldon and Elliot (1999) examined three longitudinal datasets and determined that daily experiences of competence, relatedness and autonomy mediated the relationship between goal attainment and well-being. That is to say progress in reaching one's goals contributed to need satisfaction, in turn contributing to well-being. The mediated model tested by Sheldon and Elliot (1999)

suggests that the pursuit and attainment of any number of goals fosters well-being through experiences of competence, relatedness, and autonomy.

If competence, relatedness, and autonomy are innate needs, one would expect them to be present in various cultures and throughout the life span. Sheldon, Elliot, Kim and Kasser (2001) found that in both the United States and South Korea, two very different cultures, the three needs were associated with the happiest of times. Likewise, Deci, Ryan, Gagné, Leone, Usunov and Kornazheva (2001) found that in both Bulgaria and the United States competence, relatedness, and autonomy were associated with self-esteem.

Whereas the majority of research into the basic needs has involved adults, Véronneau, Koestner and Abela (2005) examined competence, relatedness and autonomy among children in grades three and seven. The authors found not only that competence, relatedness and autonomy were related to concurrent levels of well-being but that competence and relatedness predicted affect six weeks later. A study by Kasser and Ryan (1999) involving nursing home residents suggests that the needs persist through the life span. The authors found that residents who reported higher relatedness and autonomy each day reported greater vitality and well-being. The findings of Véronneau *et al.* (2005) and Kasser and Ryan (1999), which indicate that the needs are tied to well-being throughout the lifespan, suggest that the needs are innate.

While one might consider their pervasiveness, and accept that competence, relatedness and autonomy are indeed needs; one might reasonably ask why these three should be considered basic needs and not others. The task of examining the full gamut of human undertakings and separating other needs and desires from basic needs (those that

are innate and essential to well-being), is itself a massive undertaking. Still, as we will see below, researchers have made progress in this respect.

Sheldon *et al.* (2001) asked three different groups of Korean and American students to consider the most satisfying event they had experienced in the past semester, past month and past week and to consider the salience of ten possible psychological needs. In all three studies, relatedness, autonomy, competence, and self-esteem were rated most salient. Ryan and Deci (2000, p. 326) add that, “to say that there is a need for self-esteem would be equivalent to saying there is a need for well-being, a clearly tautological position”.

Others have argued that competence, relatedness and autonomy are important and yet maintained that other constructs are equally important. Ryff (1989) defines psychological well-being (PWB) as perceived engagement with existential challenges of life. Out of a synthesis of developmental, clinical and mental health theory and research, Ryff (1995) proposes six key dimensions of PWB, namely mastery, positive relatedness, autonomy, purpose, personal development and self-acceptance; three of which (mastery, positive relatedness, and autonomy) correspond to the three needs under discussion. It is useful to consider why the three dimensions proposed by Ryff that do not correspond to those proposed by SDT, namely purpose, personal development and self-acceptance, should not be considered basic needs.

Purpose, personal development and self-acceptance are likely consequences of engaging in activities that satisfy the three basic needs. Purpose may be considered a product of successful engagement in activities (competence) that one endorses at the highest level of reflection (autonomy). Moreover, a sense of purpose may be gained by

perceiving oneself as part of something greater (relatedness). Personal development is likely achieved through becoming more skilled at various activities (competence), more connected to others (relatedness) or freeing oneself from external pressures (autonomy). Similarly, it seems unlikely for someone to be self-accepting if they feel unskilled, unloved and coerced in all that they do.

Other studies have compared various goal orientations to determine whether those focused on the three needs are more conducive to well-being than those focused on acquired goals like wealth, fame and appearance. Kasser and Ryan (1993) showed that placing greater importance upon financial success than on intimacy and community (goals that may be considered part of the relatedness rubric) had negative consequences in terms of distress, psychological adjustment and general well-being. Sheldon, Ryan, Deci and Kasser (2004) extended these findings, examining the relationship between variations in well-being and the importance placed on intrinsic and extrinsic goals. Through three studies, Sheldon *et al.* showed that the pursuit of extrinsic goals for wealth, fame and appearance was negatively associated with well-being, whereas the pursuit of intrinsic goals such as having caring relationships with others (relatedness) was positively related to well-being. As such, it would seem that being oriented toward the three needs tends to lead to a happier life than does placing undue importance on acquired needs and desires.

In sum, the research reviewed above indicates that, just as one would expect were competence, relatedness and autonomy basic needs, people who are oriented toward these three, as opposed to various acquired needs, are happier (Kasser & Ryan, 1993; Sheldon, *et al.*, 2004), that events fostering a sense of competence, relatedness and autonomy are

associated with heightened well-being (Gagné *et al.*, 2003; Reis *et al.*, 2000), that people are particularly motivated to pursue activities that satisfy the three needs (Nadeau *et al.*, 2003; Sheldon & Elliot, 1998) and that these links hold across cultures and age groups (Connel *et al.*, 1995; Kasser & Ryan, 2000). Further, over the years, numerous researchers have emphasized the importance of competence, relatedness and autonomy in different guises (e.g., DeCharms, 1968; Ryff, 1993; Sullivan, 1953; White, 1959).

Competence, Relatedness and Autonomy at Work

Following from the argument that competence, relatedness and autonomy are basic needs, SDT theorists argue that the three needs are essential to motivation and well-being in every domain of life (Ryan, 1995). If this were the case, one would expect need satisfaction at work to predict various indicators of motivation (e.g. performance) and well-being (e.g. job satisfaction). Studies examining individuals employed in various occupations and countries indicate that such links do indeed exist.

Ilardi, Leone, Kasser and Ryan (1993) asked factory workers and supervisors to rate the degree to which employees were satisfying the three needs at work. Both worker and supervisor ratings of need satisfaction were associated with job satisfaction, self-esteem and fewer symptoms of illness. Even in the factory setting, where one might assume workers have little decision latitude, autonomy was a particularly salient need, demonstrating a relationship with task specific satisfaction, job satisfaction, and mental health.

Baard, Deci and Ryan (2004) showed that, in two organizations, workers' perceptions of the degree to which their supervisors were supportive of autonomy

predicted the degree to which workers were able to satisfy all three basic needs on the job, in turn predicting performance evaluation and psychological adjustment. Likewise, Blais and Brière (1992) found autonomy supportive management to be indicative of job satisfaction and inversely related to absenteeism, again highlighting the importance of autonomy.

Deci *et al.* (2001) examined the relationship between the satisfaction of the three needs at work, engagement with work, and self esteem among employees of state-owned companies in Bulgaria and a privately owned corporation in the United States. The authors tested a model, employing data from both countries, which indicated that need satisfaction was highly related to self-esteem and engagement, a construct similar to commitment.

While competence, relatedness and autonomy have not been explicitly measured in Canada's Naval Reserve, various features of the organization suggest routes by which they may be satisfied. As is the case in well-organized military components, Naval Reservists spend much of their time training, that is, in honing their skills and learning new ones. As such, successful training should serve to bolster the trainee's sense of competence. Service with the Naval Reserve offers considerable opportunity to learn and practice a wide variety of skills including first aid, fire fighting, weapon use, leadership and the operation of sophisticated equipment.

A sense of relatedness, commonly termed camaraderie is an important feature of service in the Naval Reserve. In a series of focus groups with Naval Reservists located across the country, when asked what they enjoy most about serving, participants most often cited their working relationships (Jenkins, 2005). Indeed, for Naval Reservists, a

sense of being part of a close-knit family (unit) and a duty to one's fellow members may well be the most critical determinants of job satisfaction.

Autonomy is a particular challenge in military organizations regularly emphasizing tradition, uniformity, hierarchy and obedience. In the Naval Reserve, as in most military organizations, newer members generally have little latitude in deciding how to complete tasks. Promotion generally offers more opportunity for autonomy, but with rank levels so numerous most members are likely to perceive that they have little input into many important decisions affecting them, decisions normally made at a higher link in the chain. This said, apart from operations in which orders must be carried out immediately without second thought, there is room for autonomy. Naval Reservists are employed in a variety of occupations and carry out a great variety of tasks. Autonomy for a cook might mean discretion over the day's menu, while autonomy for a maritime surface and subsurface officer could mean plotting a course at sea.

If competence, relatedness, and autonomy are indeed essential to well-being in every domain of life, then one would expect their satisfaction at work to determine, in part the extent to which employees, including Naval Reservists, are satisfied with their jobs. Intuitively, if employees regularly fail to complete the tasks they are assigned at work, have no say in deciding how to carry out those tasks, and dislike the people with whom they work, one would expect them to be dissatisfied with their jobs. Conversely, if employees find their work interesting and challenging, if they have a reasonable amount of decision latitude, and have positive relationships with the people they work with, one might reasonably expect them to be satisfied with their jobs and more satisfied with their lives, overall.

Job Satisfaction

Job satisfaction describes “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976, p. 1300). As such, job satisfaction represents an amalgam of various sources of satisfaction and dissatisfaction with work.

Work is an important domain of life for most people and, assuming an individual is employed, the degree to which individuals are satisfied with their jobs should contribute to how satisfied they are with their lives overall. For many people work is a major source of competence and purpose. Conversely, not having a job, or not being able to perform one’s job can be a great source of unhappiness, clinical depression, and even ill health (Argyle, 1996). Having conducted a longitudinal analysis, Harpaz (1983) reported dissatisfaction with one’s job may result in frustration, aggression, psychological withdrawal, poor physical health, shortened life span, mental health problems, and lower life satisfaction. Having conducted a meta-analysis of 34 studies and correcting for unreliability, Tait, Padgett and Baldwin (1989) reported a mean correlation between job and life satisfaction of .44.

The idea that job satisfaction can have valuable outcomes for the employer as well as the employee has been around for quite some time. In an early meta-analysis, Vroom (1964) reported a median correlation between job satisfaction and performance of .14. More recently, Iaffaldano and Muchinsky (1985) reviewed 74 studies and reported a mean corrected correlation between the two variables of .17. In contrast, Petty, McGee and Cavender (1984), having also conducted a meta-analysis, reported a mean correlation

of .31. Similarly, Judge, Thoreson, Bono and Patton (2001) estimated an underlying correlation between the two variables of about .30.

In addition to displaying higher performance, Harpaz (1983) reported that employees higher in job satisfaction were absent from work less often and reported fewer grievances than their less satisfied colleagues. An organization that fosters job satisfaction among its employees is likely to be better able to attract highly qualified individuals and to retain current employees longer, resulting in lower costs associated with recruiting and training (Arnold & Feldman, 1982; Mathieu & Zajac, 1990).

But job satisfaction only tells part of the story. Also important are employees' attitudes toward the organization as a whole. This distinction between an employee's perception of the job and the organization is particularly important in organizations, like the Naval Reserve, where employees move frequently from one position to another. Reservists who are unhappy with their current jobs within the organization, but who, through previous experience, have developed an emotional attachment to the organization, may be willing to suffer through, with the expectation that conditions will improve.

Affective Commitment

Whereas job satisfaction results from the appraisal of relatively specific aspects of the job (Locke, 1976), organizational commitment results from the evaluation of more general aspects of the entire organization (Mowday *et al.*, 1982). Research suggests that job satisfaction affects outcomes like performance, absenteeism and turnover by affecting

the degree to which the employee is committed to an organization (e.g., Dougherty *et al.*, 1985; Villeneuve *et al.*, 2004).

Mowday, Porter and Steers (1982) define organizational commitment as “the relative strength of an individual’s identification with and involvement in a particular organization” (p. 26). The authors argue that commitment is characterized by three factors: (1) a strong belief in and acceptance of the organization’s goals and values, (2) a willingness to exert considerable effort on behalf of the organization and (3) a strong desire to maintain membership in the organization. Organizational commitment as conceived by Mowday *et al.* (1982) is not unlike the bond between devoted sports fans and the teams they support. Fans may be displeased with a team’s win/loss record, indeed the team’s abysmal record may be a major source of frustration, but because they have previously developed an emotional attachment to the team they may well continue to support it.

Allen and Meyer (1996) argue that three forms of commitment, namely affective, continuance and normative commitment are important to consider. Affective commitment is defined as an employee’s emotional attachment to, identification with, and involvement in an organization, and roughly corresponds to organizational commitment as conceived by Mowday *et al.* (1982). Normative commitment, in contrast, describes the employee’s sense of obligation to the organization. Thirdly, continuance commitment is rooted in the perceived costs of leaving an organization. Employees high in continuance commitment may not feel indebted to, or wish to work with an organization, but feel that they do not have any preferable alternatives currently available.

Recent research, including that employing military samples, indicates that normative commitment is largely redundant with affective commitment, at least in terms of its predictive validity (Bernard *et al.*, 2003; Karrasch, 2003; Villeneuve *et al.*, 2003; Wasti 2003). Karrasch (2003), employing a sample of U.S. military members and using confirmatory factor analysis, concluded that normative commitment did not provide much additional information above and beyond affective and continuance commitment. Two studies employing respondents from the Canadian military, and utilizing structural equation modeling, also concluded there existed a great deal of redundancy between the two measures (Bernard *et al.*, 2003; Villeneuve *et al.*, 2004). In addition Bernard, Villeneuve and Laberge (2003) found that intent to remain in the military was significantly linked with affective and continuance but not normative commitment.

While the added value of measuring normative commitment seems questionable, affective and continuance commitment are important to consider in that they illustrate two very different motives for remaining with an organization. An employee high in affective commitment feels a strong sense of belonging with the organization. An employee high in continuance commitment does not necessarily enjoy being a member of the organization but is not confident in being able to secure comparable employment. But while it does seem to play a role in causing turnover (e.g., Allen & Meyer, 1996) the benefit of fostering (or alternatively minimizing) continuance commitment is uncertain. While certain researchers have found continuance commitment to be unrelated to outcomes like attendance and performance (Angle & Lawson, 1994; Hackett *et al.*, 1994) other findings suggest that continuance commitment can be detrimental to the organization in terms of lowering performance (Konovsky & Cropanzano, 1991) and

leadership ability (Karrasch, 2003). In contrast, affective commitment is very valuable to organizations by virtue of links with outcomes including performance (Baugh & Roberts, 1994) and turnover (Allen & Meyer, 1996) briefly summarized below. For these reasons the present study is focused on affective rather than normative or continuance commitment.

Affective commitment is an appealing construct by virtue of the various valuable organizational outcomes it tends to be associated with. Researchers have found affective commitment to be negatively related to tardiness (Sommers *et al.*, 1996) and voluntary absenteeism (Meyer *et al.*, 1993; Hackett *et al.*, 1994). Affective commitment has been linked to self-reports of work effort (e.g., Bycio *et al.*, 1995), self-reports of job performance (e.g., Baugh & Roberts, 1994) and supervisor reports of performance (Konovsky & Cropanzano, 1991). Affective commitment has also demonstrated a positive relationship with organizational citizenship behaviour, or “going above and beyond” one’s job description (Organ, 1988). Studies have reported a positive relationship between affective commitment and both self-report (e.g., Pearce, 1993) and independent measures of citizenship behaviour (e.g., Shore & Wayne, 1993).

Several studies have found affective commitment to be negatively related to intent to leave an organization (e.g., Allen & Meyer, 1996). Turnover is a particularly important variable in military organizations where a great deal of time and money is invested in training. Recently Villeneuve, Dobрева-Martinova and Currie (2004) developed and tested a model of retention in the Canadian military indicating affective commitment to be an important predictor of intent to leave the organization. Bernard *et al.* (2003) tested three models of the relationship between job satisfaction, affective commitment and

intent to stay among officers of the Canadian Air Force. The model selected indicated that the relationship between job satisfaction and intent to stay was mediated by affective commitment. The authors reported a strong correlation between job satisfaction and affective commitment (.48) and a correlation between affective commitment and intent to leave the military (- .41), comparable to that reported in a meta-analysis of the relationship between commitment and intent to leave (-.46, Mathieu & Zajac, 1990).

In a review of SDT and work motivation, Gagné and Deci (2005) suggest that the literature supports the proposition that need satisfaction leads to commitment, but to date, research explicitly examining the link between competence, relatedness, autonomy and any form of organizational commitment is sparse. Researchers have found organizational commitment based on the work of Mowday *et al.* (1982) to be positively related to decision latitude (Gregersen & Black, 1992) and task autonomy (Dunham *et al.*, 1994). In a similar vein, Mathieu and Zajac (1990) examined several individual characteristics and reported that competence displayed the strongest relationship with organizational commitment. Sheldon and Bettencourt (2002) asked students in introductory psychology to consider a campus group they were part of and complete a series of measures, including relatedness and autonomy, as well as a single item measure of organizational commitment that read “How committed do you feel to this group?” As expected the authors found relatedness and autonomy to be positively correlated with commitment (.50 and .35, respectively).

Aside from findings that need satisfaction is positively associated with job satisfaction (Ilardi *et al.*, 1993) and job satisfaction positively associated with affective commitment (Dougherty *et al.*, 1985), there is a theoretical basis for positing a link

between need satisfaction and affective commitment. Deci and Ryan (2000) suggest that “supports for basic psychological needs in *any* relationship...play a crucial role in predicting feelings of attachment in that relationship” (p. 262, italics added).

Life Satisfaction

Life satisfaction refers to how satisfied people are with their lives. This simplest of definitions is quite similar to definitions of quality of life and well-being. Dalkey and Rourke (1973, p.2), for instance, define quality of life simply as “a person’s sense of well being, his satisfaction or dissatisfaction with life or happiness or unhappiness”. Just as job satisfaction represents an amalgam of various sources of satisfaction and dissatisfaction with work, life satisfaction represents an amalgam of various sources of satisfaction and dissatisfaction with life as a whole.

Shin and Johnson (1978) describe life satisfaction as a judgment process whereby individuals evaluate the quality of their lives according to their own criteria. Life satisfaction is an appealing indicator of well-being precisely because it does not specify a finite set of domains or dimensions for individuals to consider in evaluating the quality of their lives. Further, the importance of various emotions, dimensions or domains specified by others (e.g. Ryff, 1993) is likely to differ depending on the individual in question (Diener *et al.*, 1985). Measures of life satisfaction like the Satisfaction With Life Scale (Pavot & Diener, 1993) allow people to evaluate their lives according to whatever criteria are most relevant to them.

The Present Study

The present study sought to merge the two areas of research summarized above: SDT and industrial-organizational research centered on affective commitment. By testing relationships between an employee's sense of competence, relatedness, and autonomy at work, job satisfaction, life satisfaction, and affective commitment, the study examined whether an organization that provides a work environment that satisfies the basic psychological needs of its employees is likely to foster a happier, more committed workforce.

Competence, autonomy and relatedness may provide a very concise description of what is truly important to people beyond maintaining their physical well-being. SDT describes how the three needs are essential to well-being and that individuals are intrinsically motivated to engage in activities that satisfy these needs (Deci & Ryan, 2000). Affective organizational commitment as defined by Mowday *et al.* (1982) and clarified by Meyer and Allen (1997) is a unifying concept in industrial/organizational psychology and a valuable outcome by virtue of positive links to performance, job satisfaction, and citizenship behaviour and negative links with absenteeism, tardiness, and turnover. By tying the satisfaction of basic psychological needs to life satisfaction and affective commitment, the study sought to examine whether Reservists who are better able to satisfy their needs for competence, relatedness and autonomy at work are more satisfied with their jobs and consequently more committed and more satisfied with their lives overall.

H₁: Competence, relatedness and autonomy at work will each account for significant unique variance in job satisfaction.

As competence, relatedness and autonomy are considered to each be essential to well-being, the satisfaction of each at work was hypothesized to be an important determinant of the degree to which work is enjoyable. All three were expected to contribute something different to job satisfaction and, as such, each one was expected to account for significant unique variance in job satisfaction.

H₂: Competence, relatedness and autonomy at work will each account for significant unique variance in life satisfaction.

Also based on the supposition that competence, relatedness and autonomy are prerequisites to a satisfying life, and work is an important domain of life, it was hypothesized that each would contribute to life satisfaction independent of the others.

H₃: The relationships between competence, relatedness, autonomy at work and life satisfaction will be mediated by job satisfaction.

It was hypothesized that the satisfaction of basic needs at work would affect life satisfaction by affecting an individual's global assessment of work-life, operationalized here as job satisfaction. In the same way that satisfaction with various features of work-life contribute to job satisfaction, it is argued that overall satisfaction with various

domains of life, including work, contribute to an overall assessment of life as a whole, operationalized here as life satisfaction (e.g. I am fairly satisfied with work, home, health and interpersonal relationships, therefore I am fairly satisfied with my life as a whole).

H₄: Competence, relatedness and autonomy at work will each account for significant unique variance in affective commitment.

It was hypothesized that each of three needs would contribute to affective commitment independent of the others because they indicate how much an employee enjoys being part of the organization. Enjoying membership in an organization is considered a critical step to developing an emotional bond with the organization.

H₅: The relationships between competence, relatedness and autonomy at work and affective commitment will be mediated by job satisfaction.

As with life satisfaction, it was hypothesized that job satisfaction would mediate the relationship between the satisfaction of the basic needs at work and affective commitment. It is argued that competence, relatedness and autonomy are important determinants of the degree to which work is enjoyable: a key consideration in evaluating a particular job. It is proposed that the satisfaction of basic needs shapes the overall evaluation of the job itself, which, in turn, shapes an assessment and emotional reaction to the organization as a whole, represented by affective commitment.

Differences in mean scores, as well as differences in the strength of relationships between the various constructs were examined with respect to gender, rank group, full versus part-time status and between static and operational units, in order to determine whether hypothesized linkages held across the various groups. If competence, relatedness and autonomy are basic needs common to every individual and important in any job then one would expect the relationships to hold across the various groups. This said, one might imagine that, among individuals employed part-time, need satisfaction might not be meaningfully associated with life satisfaction, as these individuals have more opportunity to satisfy them elsewhere. One might also imagine that officers, having greater decision latitude, would experience greater autonomy than non-commissioned members or that relatedness could be exceptionally important for those employed on ship, individuals who spend a great deal more time together in close quarters than individuals employed in static units.

Method

Participants

Participants were members of Canada's Naval Reserve. Naval Reservists are employed at 24 Naval Reserve Divisions across Canada, at Canadian Forces Fleet School Quebec and Naval Reserve Headquarters in Quebec City and at Canadian Forces Bases Halifax and Esquimalt. The majority of Reservists at the Naval Reserve Divisions are employed on a part-time basis, whereas the majority of Reservists at the remaining locations are employed on a full-time basis, agreeing to contracts ranging anywhere from a few weeks, to three years in length. The largest group of full-time members is

responsible for manning and providing support to a dozen Maritime Coastal Defence Vessels. Each Naval Reservist is trained in one of a dozen occupations that include Diver, Boatswain, Naval Combat Information Operator, Supply Technician and Cook.

In total, 2014 completed questionnaires were returned, representing 57.4% of the Naval Reserve. On average, respondents were 30.5 years of age ($SD = 9.8$). 67.6% of percent of respondents were male, 71.6% were Anglophone, 9.0% of respondents were members of a visible minority, and 1.5% were Aboriginal. The majority of respondents were unmarried (57.8%), 37.0% were married, or living common law, with the remainder separated (2.5%), divorced (2.4%) or widowed (0.3%). Close to 27% of respondents were primary caregivers. Two thirds of respondents (66.5%) were serving on a part-time basis. On average, respondents indicated having served with the Naval Reserve for 4.5 years ($SD = 6.6$). Seventy eight percent of respondents were non-commissioned members (NCMs), while the remainder were officers.

Procedure

Questionnaires were bilingual booklets, and included all necessary instructions as to how they were to be completed and returned. Participation was voluntary and anonymous. Based on prior experience in sampling military members, it was determined that response rates would be maximized if potential respondents were asked to participate while at work.

Given that many participants were employed by the Naval Reserve on a part-time basis, training with their unit approximately once a week, questionnaires were mailed to a contact at each Naval Reserve Division who received prior instructions about scheduling

time during a training day/evening in which Reservists would be asked to complete the questionnaire. Rather than stratifying the sample based on various criteria and distributing only to certain individuals, which would have complicated the contacts' role and risked discontent among those not selected to participate, a sufficient number of questionnaires were sent to the Divisions so that each Reservist attending the particular training day/evening would have the option of participating. Once they had completed the questionnaire, respondents at the Divisions were instructed to seal the instrument in envelopes provided and return them to the contact. Contacts then forwarded the questionnaires to the author by mail. At locations other than the Divisions, questionnaires were mailed to support staff who forwarded one to each Naval Reservist employed at their location. As per instructions provided, full-time Reservists who chose to complete the questionnaire sealed them in the return envelope provided, and mailed them to the author.

Measures

Scales were brief, either four or five items depending on the construct. Burisch (1984) compared short scales to scales three to five times their length and found that, in 10 of 19 cases, the shorter scales not only exhibited comparable validity but actually outperformed their larger counterparts. In a later study Burisch (1997) found that scales of two to four items may suffer no loss of validity over larger versions should the items be carefully selected. Further, Burisch (1984, p. 93) speculated, "the optimal scale length is *in general* considerably shorter than the actual length of most popular tests would make us believe".

Items were professionally translated into French. Following translation, bilingual researchers and a second professional translator reviewed the French and English versions to confirm they were equivalent. During pilot testing, Naval Reservists were asked to identify items they found difficult to understand.

Basic Psychological Needs

Competence, relatedness and autonomy were assessed via items borrowed from the Intrinsic Need Satisfaction Scale. The Intrinsic Need Satisfaction Scale has been administered to employees in a variety of organizations both public and private. In Bulgarian and American samples Deci *et al.* (2001) reported Cronbach alphas for the original seven and eight item competence, relatedness and autonomy subscales ranging from .57 to .84. The findings of Ilardi *et al.* (1993) and Baard *et al.* (2004) outlined earlier, point to the validity of the items.

Certain items from the original scale were discarded prior to administration, both in the interest of space and because they seemed to tap the satisfaction of more than one need. Discarded items included “People at work tell me I am good at what I do” which is intended to measure competence but seems to tap relatedness also, and “My feelings are taken into consideration at work” which purportedly assesses autonomy but also appears to tap relatedness. Four items were retained to assess the satisfaction of each of the three needs. Items retained for the present study included: “Most days I feel a sense of accomplishment from working”, “I consider the people I work with to be my friends” and “There is not much opportunity for me to decide for myself how to go about my work”

(Reverse-scored). Each time participants were asked to indicate, on a five-point scale, their agreement with each statement.

Job Satisfaction

Job satisfaction was assessed by a global item adapted from a review of measures assessing job satisfaction by Scarpello and Campbell (1983), which was supplemented by four similar items assessing satisfaction with workload, immediate supervisor, pay and allowances and opportunities for advancement. The global item was phrased “Overall how satisfied are you with current job/position in NAVRES?”. A five-point scale of satisfaction accompanied the five items.

Life Satisfaction

Life satisfaction was assessed via the Satisfaction with Life Scale, which asks participants to indicate, using a five-point scale, their agreement with five items including “The conditions of my life are excellent” (SWLS; Diener *et al.*, 1985). The SWLS is commonly employed to measure life satisfaction and has been administered to numerous populations in dozens of countries across the globe (Diener *et al.*, 2000). Researchers have demonstrated convergent validity between the SWLS and larger instruments such as the Life Satisfaction Index (Neugarten *et al.*, 1961), the Beck Depression Inventory (Blais *et al.*, 1989), and interviewer ratings (Diener *et al.*, 1985). Pavot and Diener (1993) cited internal consistency coefficients for the SWLS ranging from .79 to .89.

Affective Commitment

An abbreviated scale published by Gade, Tiggie and Schumm (2003) was employed to measure affective commitment. Gade *et al.* reported that the four-item scale demonstrated adequate psychometric properties with internal consistency coefficients ranging from .75 to .89 among various military samples. Items were modified by substituting “NAVRES” in place of “organization” and included “I feel emotionally attached to NAVRES”. A five-point scale of agreement was provided.

Results

On average, respondents reported a moderate sense of competence and autonomy at work and a moderately high level of relatedness (Table 1). The four items for competence and relatedness demonstrated a moderate degree of internal consistency whereas the four items assessing autonomy demonstrated a rather low level of internal consistency (Table 1).

Table 1: Mean, Variance and Internal Consistency

<i>Construct</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Internal Consistency</i>
Competence	3.72	0.69	0.61
Relatedness	4.11	0.58	0.66
Autonomy	3.46	0.76	0.43
Job satisfaction	3.60	0.62	0.59
Life satisfaction	3.46	0.72	0.82
Affective commitment	3.35	0.82	0.84

Note: Descriptive statistics have been adjusted to a five-point scale.

On average, respondents reported being somewhat satisfied with their jobs and with their lives, and a moderate degree of affective commitment. The five-item scale of job satisfaction demonstrated modest internal consistency whereas the four items assessing affective commitment, and the SWLS demonstrated a fairly high level of internal consistency (Table 1). The correlations among key variables are presented in Table 2. While all correlations, and many regression coefficients that follow were statistically significant, those of less than .2 were considered not particularly meaningful given that they represent a small effect (Cohen, 1992).

Table 2: Correlation Matrix of Key Variables

<i>Variables</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1 Competence	1					
2 Relatedness	.408*	1				
3 Autonomy	.544*	.357*	1			
4 Job satisfaction	.457*	.288*	.406*	1		
5 Life satisfaction	.213*	.225*	.176*	.263*	1	
6 Affective commitment	.364*	.349*	.276*	.375*	.239*	1

* significant at $p < .001$

Basic Psychological Needs and Job Satisfaction (H_1)

It was hypothesized that the basic needs would each account for significant unique variance in job satisfaction, which would suggest whether each is critical to the quality of work-life. Competence and autonomy were highly correlated with job

satisfaction ($r = .457, .406$ respectively, $p < .001$), whereas relatedness demonstrated a relationship with job satisfaction of moderate strength ($.288, p < .001$).

Table 3: Regression Equation - Job Satisfaction

<i>Predictor</i>	β	t	p	R	R^2
Competence	.341	12.17	.000		
Relatedness	.127	4.259	.000		
Autonomy	.219	8.814	.000	.501	.251

Regression indicated that, when considered together, competence retained a robust association with job satisfaction ($\beta = .341, p < .001$), autonomy less so ($\beta = .219, p < .001$), and relatedness still less so ($\beta = .127, p < .001$). Still, each of the needs did account for significant unique variance in job satisfaction, thus H_1 was supported. Together the basic needs accounted for about a quarter of the variance in job satisfaction ($R^2 = 25.1\%$, Table 3).

Basic Psychological Needs and Life Satisfaction (H_2)

As with job satisfaction, it was expected that each basic need would account for significant unique variance in life satisfaction, which would test whether the satisfaction of the three needs at work is related to the quality of life as a whole. Competence, relatedness and autonomy at work were positively correlated with life satisfaction ($r = .213, .225, .176$, respectively, $p < .001$).

Considered together, relatedness retained a meaningful relationship with life satisfaction ($\beta = .237, p < .001$), competence less so ($\beta = .157, p < .001$) and autonomy still less so ($\beta = .072, p < .05$). Regression indicated that competence and relatedness accounted for significant unique variance in life satisfaction but that the quantity of variance uniquely attributable to autonomy was not substantive. Consequently H_2 was partially supported. Participants' sense of competence, relatedness and autonomy at work accounted for 7.1% of the variance in reports of life satisfaction (Table 4).

Table 4: Regression Equation - Life Satisfaction

<i>Predictor</i>	β	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> ²
Competence	.157	4.35	.000		
Relatedness	.237	6.14	.000		
Autonomy	.072	2.27	.023	.266	.071

Job Satisfaction Mediating the Basic Needs - Life Satisfaction Relationship (H_3)

It was hypothesized that the relationships between competence, relatedness, autonomy and life satisfaction would be mediated by job satisfaction. It was thought that the satisfaction of basic needs would contribute to an overall assessment, and affective reaction to the job itself (represented by job satisfaction), which would in turn contribute to an assessment of life as a whole.

Given that each of the basic needs was found to be positively related to job satisfaction and, with the exception of autonomy, to life satisfaction, and given that job and life satisfaction were positively related to one another, certain prerequisites for mediation were present. Regression analyses were conducted in order to examine whether

job satisfaction mediated the relationship between each need and affective commitment. Should the indirect effect of each basic need on the dependent variable via the mediator be significantly different from zero, H_3 would be supported (Baron & Kenny, 1986).

Each time, when job satisfaction was added to a regression equation predicting life satisfaction, the Beta associated with the need – life satisfaction relationship was diminished, but remained significant, indicating that mediation was partial and the needs impact directly upon life satisfaction or do so through other mediators (Tables 5-7). Sobel tests confirmed that the indirect effect of each basic need on life satisfaction via job satisfaction were significantly different from zero (Preacher & Leonardelli, 2001). Given that a fully mediated model was hypothesized, H_3 was partially supported.

Table 5: Examining Job Satisfaction as Mediator Between Competence and Life Satisfaction

<i>Step</i>	<i>Predictor</i>	<i>Criterion</i>	β	<i>t</i>	<i>p</i>
1	Competence	Life satisfaction	.213	9.5	.000
2	Competence	Life satisfaction	.127	5.1	.000
2	Job satisfaction	Life satisfaction	.207	8.3	.000

Sobel test: $z = 7.80, p < .001$

Table 6: Examining Job Satisfaction as Mediator Between Relatedness and Life Satisfaction

<i>Step</i>	<i>Predictor</i>	<i>Criterion</i>	β	<i>t</i>	<i>p</i>
1	Relatedness	Life satisfaction	.225	10.1	.000
2	Relatedness	Life satisfaction	.166	7.1	.000
2	Job satisfaction	Life satisfaction	.216	9.3	.000

Sobel test: $z = 7.50, p < .001$

Table 7: Examining Job Satisfaction as Mediator Between Autonomy and Life Satisfaction

<i>Step</i>	<i>Predictor</i>	<i>Outcome</i>	β	<i>t</i>	<i>p</i>
1	Autonomy	Life satisfaction	.176	7.8	.000
2	Autonomy	Life satisfaction	.085	3.4	.001
2	Job satisfaction	Life satisfaction	.227	9.2	.000

Sobel test: $z = 8.24, p < .001$ Basic Psychological Needs and Affective Commitment (H₄)

It was hypothesized that each of the three needs would contribute to affective commitment, independent of one another, which would test whether all three needs are important in fostering an emotional bond with the organization. All three needs were moderately related to affective commitment (Table 2). Regression analysis indicated that, while competence ($\beta = .273, p < .001$) and relatedness ($\beta = .323, p < .001$) seemed to contribute to affective commitment to approximately the same degree as one another, autonomy did not account for a meaningful quantity of variance in affective commitment over and above that accounted for by the other needs ($\beta = .077, p < .01$), consequently H₃ was partially supported. Together, competence, relatedness and autonomy accounted for 18.3% of variance in affective commitment (Table 8).

Table 8: Regression Equation - Affective Commitment

<i>Predictor</i>	β	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> ²
Competence	.273	8.85	.000		
Relatedness	.323	9.89	.000		
Autonomy	.077	2.82	.005		
				.428	.183

Job Satisfaction Mediating the Basic Needs – Affective Commitment Relationship (H₅)

It was hypothesized that the relationships between competence, relatedness, autonomy and affective commitment would be mediated by job satisfaction. It is argued that the satisfaction of basic needs shapes the overall evaluation of the job itself, which, in turn, shapes an assessment and emotional reaction to the organization as a whole, represented by affective commitment.

Given that each of the basic needs were shown to be positively correlated with job satisfaction and, with the exception of autonomy, affective commitment, and given that job satisfaction and affective commitment were positively related to one another, certain prerequisites for mediation were present. Regression analyses were conducted in order to examine whether job satisfaction mediated the relationship between each need and affective commitment.

As with H₃, each time, when job satisfaction was added to a regression equation predicting affective commitment, the Beta associated with the need –affective commitment relationship was diminished, but remained significant, indicating that mediation was partial and the needs do impact directly upon commitment or that they do so through other mediators (Tables 9-11). Sobel tests confirmed that the indirect effect of each basic need on affective commitment via the mediator was significantly different from zero ($p < .001$). Given that a fully mediated model was hypothesized, H₅ was only partially supported.

Table 9: Examining Job sat. as Mediator Between Competence and Affective Commitment

<i>Step</i>	<i>Predictor</i>	<i>Outcome</i>	β	<i>t</i>	<i>p</i>
1	Competence	Affective Commitment	.364	17.2	.000
2	Competence	Affective Commitment	.244	10.4	.000
2	Job satisfaction	Affective Commitment	.264	11.3	.000

Sobel test: $z = 9.97, p < .001$

Table 10: Examining Job sat. as Mediator Between Relatedness and Affective Commitment

<i>Step</i>	<i>Predictor</i>	<i>Outcome</i>	β	<i>t</i>	<i>p</i>
1	Relatedness	Affective Commitment	.349	16.3	.000
2	Relatedness	Affective Commitment	.260	12.0	.000
2	Job satisfaction	Affective Commitment	.302	13.9	.000

Sobel test: $z = 9.43, p < .001$

Table 11: Examining Job sat. as Mediator Between Autonomy and Affective Commitment

<i>Step</i>	<i>Predictor</i>	<i>Outcome</i>	β	<i>t</i>	<i>p</i>
1	Autonomy	Affective Commitment	.274	19.3	.000
2	Autonomy	Affective Commitment	.151	6.5	.000
2	Job satisfaction	Affective Commitment	.312	13.4	.000

Sobel test: $z = 11.23, p < .001$

Between Group Differences

Differences in mean scores, as well as differences in the strength of relationships between the various constructs were examined with respect to gender, rank group, full versus part-time status and between static and operational units. These differences were examined to determine whether certain individuals gained a greater sense of competence, relatedness, autonomy, job satisfaction or affective commitment in serving and whether the needs were more effective predictors of job satisfaction, life satisfaction and affective commitment among certain individuals than others. If competence, relatedness and autonomy are basic needs common to every individual and important in any job, then one would expect the relationships to hold across the various groups.

Mean group differences based on gender, rank, working environment and full versus part-time status were examined using one-way analysis of variance to determine significance and Cohen's *d* to obtain a measure of effect size. Between group differences, in terms of the strengths of relationships, were examined by calculating an interaction between the criterion and group variables and observing the Beta and R^2 change associated with the interaction term when it was added to regression equations predicting job satisfaction, life satisfaction and affective commitment. For instance, to examine the interaction between competence and gender in predicting job satisfaction, competence and gender were added to a regression equation followed by the competence x gender term at which time the associated Beta and R^2 were noted.

Gender

Women reported higher life satisfaction than men ($M = 3.54, 3.42$ respectively, $t = 2.86, p < .005$). In addition, competence, relatedness and autonomy each served as

better predictors of job satisfaction among women, but poorer predictors of life satisfaction. Although these differences in relationship strength were statistically significant, they were not meaningful as evidenced by the interaction term accounting for no more than 0.6% of variance over and above that accounted for by the constructs themselves (Appendix B).

Rank Group

A number of mean differences between officers and NCMs were evident (Table 12). Officers reported a greater sense of competence and autonomy at work as well as a greater sense of affective commitment and life satisfaction than did NCMs, each of these differences being significant at $p < .001$.

Table 12: Mean Differences Between Officers and Non-Commissioned Members

<i>Variable</i>	<i>Officers (Mean)</i>	<i>NCMs (Mean)</i>	<i>t</i>	<i>p</i>	<i>Effect size (r)</i>
Competence	3.88	3.69	4.74	.000	.127
Relatedness	4.13	4.11	0.77	.443	.021
Autonomy	3.62	3.43	4.68	.000	.127
Job Satisfaction	3.55	3.62	2.33	.020	.062
Life Satisfaction	3.59	3.43	4.04	.000	.114
Affective Commitment	3.51	3.30	4.66	.000	.127

Relationships between certain constructs also differed depending on rank. Job satisfaction demonstrated a higher correlation with affective commitment among NCMs ($r = .406, p < .001$) than among officers ($r = .321, p < .001$). Likewise, job satisfaction

demonstrated a stronger relationship with life satisfaction among NCMs ($r = .289, p < .001$) than officers ($r = .211, p < .001$). But while these differences were statistically significant, they were not meaningful, with interaction terms accounting for just 0.2% of variance in commitment and life satisfaction (Appendix B).

Full versus Part-time Status

A number of mean differences between those employed on a full-time basis and those employed on a part-time basis were observed, each significant at $p < .01$ (Table 13). Those employed on a full-time basis reported higher competence and autonomy than those employed on a part-time basis. In contrast, those employed part-time reported a greater sense of relatedness and affective commitment than those employed full-time. Competence was more highly correlated with life satisfaction among those employed full-time than those employed part-time ($r = .274, r = .199$, respectively, $p < .001$). While statistically significant, this difference was not meaningful as the interaction term accounted for just 0.2% of variance in life satisfaction.

Table 13: Mean Differences Between Full and Part-time Members

<i>Construct</i>	<i>Part-time (Mean)</i>	<i>Full-time (Mean)</i>	<i>t</i>	<i>p</i>	<i>Effect size (r)</i>
Competence	3.64	3.91	8.07	.000	.194
Relatedness	4.13	4.06	2.65	.008	.064
Autonomy	3.43	3.53	2.79	.005	.067
Job Satisfaction	4.51	4.48	0.86	.388	.020
Life Satisfaction	4.36	4.29	1.58	.115	.038
Affective Commitment	3.42	3.22	4.95	.000	.119

Static versus Operational Units

Those employed at static units including Naval Reserves Headquarters reported higher affective commitment than those who were part of a ship's crew ($M = 3.43, 2.98$, respectively, $t = 6.91, p < .001$). Static units also reported higher life satisfaction than operational units ($M = 3.48, 3.28$, respectively, $t = 3.53, p < .001$).

Certain relationships were stronger among operational units than static units, namely those between relatedness and job satisfaction ($r = .392, .261$, respectively, $p < .001$), autonomy and job satisfaction ($r = .554, .373$, respectively, $p < .001$) and between job satisfaction and life satisfaction ($r = .367, .259$, respectively, $p < .001$). While statistically significant, these differences in the strengths of relationships were not meaningful as the interaction terms accounted for no more than 0.2% of variance in job and life satisfaction.

Discussion

In short, the present study sought to examine whether the degree to which employees gain a sense of competence, relatedness, and autonomy at work is meaningfully associated with the extent to which they are committed to the organization, satisfied with their jobs and with their lives overall. All hypotheses at least partially supported, the results presented above add to a growing body of research pointing to the importance of the three needs at work (e.g., Deci, *et al.*, 2001; Baard, *et al.*, 2004) and in life in general (e.g., Reis, *et al.*, 2000; Sheldon *et al.*, 2001). Moreover, the present study

provides a bridge between SDT and industrial-organizational research centered on affective commitment.

As hypothesized, competence was positively associated with job satisfaction, life satisfaction and affective commitment. Findings are consistent with those of Ilardi *et al.* (1993) that a sense of competence at work is positively associated with job satisfaction. Likewise findings are consistent with those of Baard *et al.* (2004), that competence at work is associated with global indicators of well-being such as life satisfaction and psychological adjustment. The finding that competence is associated with commitment is generally consistent with the work of Mathieu and Zajac (1990).

Also consistent with hypothesized relationships, relatedness demonstrated a positive association with job satisfaction, life satisfaction and affective commitment. The findings that relatedness is positively associated with job and life satisfaction are generally consistent with prior research suggesting that love and belonging are prerequisites to a happy life (e.g., Kasser & Ryan; 2000; Sheldon *et al.*, 2004; Véronneau *et al.*, 2005). The strength of relationship between relatedness and life satisfaction is perhaps not surprising given the findings of Jenkins (2005) that Naval Reservists commonly report being motivated to serve out of a sense of camaraderie. Also, many units, such as the Maritime Coastal Defence Vessels, spend a great deal of time working closely together, often in strenuous situations. Consequently one can imagine that the quality of those relationships might be key to the quality of life as a whole and to the development of an emotional bond with the organization.

Given that relatedness at work describes the strength of attachment between employees within the organization, and affective commitment describes the strength of

attachment to the organization as a whole, the positive relationship between relatedness and commitment is perhaps to be expected. The correlation between relatedness and commitment in the present study was substantial ($r = .35$), albeit somewhat lower than that reported by Sheldon and Bettencourt (2002, $r = .50$) who examined campus group membership and employed a single item measure of commitment.

Even in a military organization, autonomy demonstrated a robust relationship with job satisfaction. One might have assumed that individuals serving in the military resign themselves to having little decision latitude or even that they thrive on rigid order. The results of the present study, in addition to research by Ilardi *et al.* (1993) involving factory workers, suggest that, even in positions offering relatively little autonomy, the need remains an important consideration in fostering job satisfaction. Furthermore, autonomy demonstrated a moderate correlation with commitment ($r = .28$) comparable to that reported by Sheldon and Bettencourt (2002, $r = .35$).

While other studies have reported a positive association between competence, relatedness, and autonomy and various indicators of well-being including affect, vitality, self esteem, psychological adjustment, and symptoms of illness (e.g., Reis *et al.*, 2000), need satisfaction is often treated as a single construct and few studies have reported whether or not these relationships are independent from one another. The primacy of one or two of the needs in predicting variables like life satisfaction would suggest whether or not all three are truly essential to integrity and well-being. Likewise the primacy of one or two needs in predicting affective commitment (or other outcomes like performance) would suggest whether an organization should be particularly concerned with one or another.

Overall, the present study suggests that competence and relatedness are particularly important in fostering employee well-being and commitment. While the relationship between autonomy and job satisfaction was fairly strong, autonomy did not account for a meaningful quantity of variance in life satisfaction or affective commitment over and above that attributable to competence and relatedness. These findings contrast somewhat with studies that have stressed the value of autonomy at work (e.g., Ilardi *et al.*, 1993).

Autonomy may have accounted for little variance over and above competence and relatedness because the items failed to properly capture the need. Autonomy was principally operationalized as freedom from micromanagement, which may be consistent with certain definitions of autonomy, but does not fully capture autonomy defined as the endorsement of one's actions at the highest level of reflection. Thus the items employed to measure autonomy may have failed to capture the extent to which Reservists endorse the work that they do. This, coupled with the fact that items assessing autonomy demonstrated lower internal consistency than those assessing competence and relatedness, may indicate that the items functioned poorly.

Alternatively, competence and relatedness may have proven more salient than autonomy because individuals look to the military as a means to challenge themselves (competence) and gain a sense of camaraderie (relatedness) more so than to gain a sense of autonomy, a need they may satisfy elsewhere (Jenkins, 2004).

As expected, given the mediated model proposed, job satisfaction was positively associated with both affective commitment and life satisfaction. The correlation between job satisfaction and affective commitment ($r = .38$) was similar to that among members

of the Regular Force reported by Bernard *et al.* (2003, $r = .48$). Likewise the correlation between job satisfaction and life satisfaction among Reservists ($r = .26$) was lower than would be suggested by a meta-analysis conducted by Tait *et al.* (1989, $r = .44$). Surprisingly, the strength of this relationship did not differ appreciably according to whether individuals were employed full or part-time.

The results indicate that job satisfaction acts as a partial mediator between the three needs and both life satisfaction and affective commitment. The preferred explanation for this finding is that, each time, more specific cognitions and affective reactions contribute to more general ones, a sort of mental aggregation that allows people to evaluate items that subsume a great many components (Kersee, 1996). When people are asked how satisfied they are with their lives they cannot possibly consider all the myriad sources of enjoyment and pain in their lives (Schwarz & Strack, 1999). Considering overall satisfaction with a few major areas or domains of life is a more manageable prospect. Accordingly it is proposed that various sources of satisfaction/dissatisfaction with work, including need satisfaction, contribute to a somewhat stable evaluation of work-life, reflected by job satisfaction, and that this evaluation of work-life is considered along with the overall quality of other domains of life in evaluating life as a whole.

Consistent with the proposition that major domains of life are important considerations in reports of life satisfaction, Schimmack, Diener and Oishi (2002) found that students, when asked how they formed their judgments of life satisfaction, commonly reported considering their relationships, academics, health and housing. In addition, the authors found that, over time, changes in life domains were associated with changes in life satisfaction. Likewise Oishi, Diener, Suh and Lucas (1999) reported that

overall satisfaction with just three domains of life (grades, family, social life) accounted for 40% of variance in life satisfaction. Furthermore, Diener *et al.* (2000) found that, across some forty-one countries, satisfaction with a few major domains of life accounted for three times the variance in life satisfaction than participants' tendencies toward evaluating their lives in a more positive (or negative) fashion than would be justified by more specific indices. The authors also reported that three major domains of life functioned as stronger predictors of individual reports of life satisfaction than seven more specific domains.

As with a person's life, a large organization like the Naval Reserve is itself a very complex and multifaceted entity. It is argued that the same sort of mental aggregation described above enables people to organize the information they have about an organization and come to terms with their fondness for that organization. In this case information relevant to the job contributes to an overall assessment of the individual's position within the organization, next this assessment is considered together with other domains of the organization (e.g., others' perceptions) in forming an overall impression of the organization as something worth being involved in and attached to, or not. Consistent with this process one would expect job satisfaction to demonstrate a substantial but by no means perfect relationship with affective commitment (e.g., Villeneuve *et al.*, 2004). Simply put, job satisfaction indicates the degree to which an individual enjoys membership within an organization (enjoyment due in part to need satisfaction), which is thought to be important in the development of an emotional bond.

A possible explanation as to why job satisfaction partially, rather than fully mediated the relationships between need satisfaction and both life satisfaction and

commitment is that positive affect associated with need satisfaction, and negative affect associated with experiences of incompetence, isolation and coercion, may tend to impact directly on job satisfaction, life satisfaction, and commitment. This is, while cognitive assessment may impact upon life satisfaction and commitment in the manner hypothesized above (e.g. I am good at my job, I see value in my work and I like the people I work with, therefore I am satisfied with my job. I am satisfied with my job, health, home and relationships therefore I am satisfied with my life as a whole), affect may not require rational inference to influence higher order judgments. While affect certainly originates in one domain of life or another, domain satisfaction and affect have been shown to predict life satisfaction independently of one another (e.g., Schimmack *et al.*, 2002) suggesting that affect associated with experiences of competence, relatedness and autonomy could impact directly on life satisfaction.

Meyer and Allen (1997) describe such a parallel process in the development of affective commitment. The authors propose a role for both conscious and unconscious experience, corresponding to cognitive and affective experience, and suggest that affective commitment may develop “quite ‘unconsciously’ through the repeated association of psychologically fulfilling experiences with the organization” (p. 51). As such, experiences of competence, relatedness, and autonomy at work may foster an emotional bond with the organization without requiring conscious reflection.

It is also conceivable that tests of mediation were positive because job satisfaction is a similar concept to both life satisfaction and affective commitment, consequently certain respondents may satisfice, responding in the same manner to similar items without taking the time to consider their lives and the organization (Tourangeau *et al.*,

2000). For instance, an individual who is having a particularly disagreeable day at work may express dissatisfaction with everything about the Naval Reserve. This said, job satisfaction was assessed with items measuring satisfaction with various components of the job itself, whereas life satisfaction and affective commitment were assessed with items asking respondents to indicate their agreement with various statements (e.g. In most ways my life is close to ideal, The Naval Reserve has a great deal of personal meaning for me). This should minimize the tendency for participants to respond in kind to the three scales without taking the time to reflect upon their jobs, lives and the organization.

Much of the value of the present study comes from the heterogeneity of the sample. Prior research into the satisfaction of basic needs at work has involved fairly homogeneous samples such as bank and factory workers (Baard *et al.*, 2004; Ilardi *et al.*, 1993). In the current sample however, respondents were employed in a dozen occupations ranging from Cook to Intelligence Officer, employed in numerous roles, ranging from administrative assistant to ship captain and at numerous locations across Canada ranging from recruiting centres to naval bases. Given that the whole of the Naval Reserve was sampled, respondents had widely varying degrees of objective autonomy. Still, hypothesized linkages between the needs, commitment, job and life satisfaction held, for the most part, and did not differ appreciably based on gender, rank, working environment or full versus part-time status. These findings provide further evidence of the pervasiveness of the three needs and suggest that competence, relatedness and autonomy are important to the quality of work-life no matter the job or background of the employee.

While all hypotheses were at least partially supported, the basic needs scales were highly inter-correlated, which lends little credence to their supposed distinctiveness. Indeed results indicate that, in predicting life satisfaction and commitment, competence and relatedness would have sufficed. Other researchers have also found the need scales to be highly related to one another (e.g., Deci *et al.*, 2001; Baard *et al.*, 2004). It may be that all hypotheses would have been fully supported had the need scales not been so highly inter-correlated. Should scales with greater discriminant validity be developed, the needs might become more effective predictors of well-being and motivation.

Whereas one might criticize the scales employed in the current study for exhibiting relatively low internal consistency, competence, relatedness and autonomy are incredibly broad concepts, and scales that display a high degree of internal consistency may be guilty of operationalizing them narrowly. Indeed it may be that scales currently in use fail to capture various facets of the three needs.

The scales employed in this study and the larger scales from which they were derived might be improved by borrowing from the concepts of affective and continuance commitment. In the present study relatedness was operationalized rather narrowly as the degree to which working relationships are amiable. In future research, relatedness could be measured more comprehensively by including items to do with the individual's sense of identification and belonging with the organization as a whole. Likewise, items assessing autonomy focused largely upon freedom from micro-management, yet the concept of intrinsic motivation is central to SDT. Autonomy could be operationalized more broadly by including items to do with the degree to which the individual endorses the work itself, as opposed to being motivated by pay and other extrinsic rewards.

A pragmatic approach, including facets of affective and continuance commitment within relatedness and autonomy would render relationships between need satisfaction and organizational commitment somewhat tautological. But by assessing relatedness and autonomy in a more comprehensive manner, that is, by incorporating a sense of identification and belonging with the organization, and the relative strength of intrinsic versus extrinsic motivation to work, a basic needs inventory could become central to human resources research. Such a scale could provide a great deal of information about employee well-being, motivation and commitment and be useful in evaluating the success of human resource strategies. Previous studies grounded in SDT and focused on work-life (e.g., Deci *et al.*, 2001; Baard *et al.*, 2004) have largely ignored the concepts of job satisfaction and commitment, opting instead to link intrinsic need satisfaction directly to outcomes like performance.

The major limitation of the study is the difficulty of determining the extent to which the needs are satisfied by the work environment as opposed to individuals simply differing in their ability to satisfy the needs, irrespective of the position they find themselves in. It is possible that certain individuals are simply better at establishing friendships and meeting the various challenges they encounter. Likewise, it is possible that certain individuals are simply more positive toward work or toward their lives in general, and report higher satisfaction and commitment (Diener *et al.*, 2000).

This central limitation might be addressed in future studies by including dispositional measures of need satisfaction in order to control for an individual's general ability to gain a sense of competence, relatedness, and autonomy, along with job specific measures. Along these lines researchers have examined the concept of autonomy

orientation (Deci & Ryan, 1985a). Individuals high in autonomy orientation tend to be self-determined and to experience social contexts as autonomy supportive. Baard *et al.* (2004) found autonomous orientation to be significantly tied to need satisfaction at work. Also, recall that, among students, Reis *et al.* (2000) found that day-level measures of need satisfaction demonstrated a relationship with well-being independent of trait measures. A similar study conducted in a work setting would be valuable.

An ideal situation would be to administer dispositional measures of the basic needs to new employees prior to their beginning a job, in order to capture a baseline level of need satisfaction, and later administer scales similar to those included in the present study in order to isolate the quantity of variance attributable to the work environment. Also advantageous would be to administer a set of scales to employees twice or more and then determine whether changes in the satisfaction of basic needs are tied to changes in job satisfaction and commitment. Deci, Connell and Ryan (1989) examined satisfaction with various features of work, including autonomy, thrice in three locations. Furthermore, an intervention was introduced, designed to increase support for self-determination. The intervention had a positive impact on managers' expressed concern for supporting autonomy that, the authors argue, in turn resulted in more positive perceptions of the job, supervisor, and organization, among subordinates. Evaluating the efficacy of interventions designed to facilitate need satisfaction would be a useful direction for future research.

In all likelihood need satisfaction is due in part to individual skill, disposition, and expectations, and in part to work environment. Surely if employees make a terrible first impression they will be disadvantaged in their ability to satisfy their needs at work.

Alternatively, employees may be competent, pleasant, and moderately independent and yet find the work environment stifling their potential. This said, researchers argue that, regardless of individual characteristics, an autonomy-supportive environment will aid employees in satisfying all three, leading in turn to higher motivation and well-being (Deci *et al.*, 2001; Baard *et al.*, 2004). Deci, Egurari, Patrick and Leone (1994) present three elements of an autonomy-supportive environment that should serve to foster intrinsic motivation and well-being in any setting: providing meaningful rationale for rules and requests, acknowledging the individual's perspective, and conveying choice rather than control. A striking contrast is evident between the three elements presented by Deci *et al.* and a traditional militaristic approach to leadership emphasizing immediate and unquestioning obedience, suggesting that increasing autonomy in the military would necessitate a fairly radical ideological shift.

Summary and Conclusion

Present findings add to a growing body of research highlighting the importance of the three needs at work and in life in general. The study has demonstrated, in a large and heterogeneous organization, that need satisfaction at work is positively associated with both global and domain-specific indicators of well-being. Moreover findings indicate that these relationships do not differ appreciably based on gender, rank, work environment or full versus part-time status, providing further evidence of the pervasiveness of the three needs and suggesting that competence, relatedness and autonomy are important to the quality of work-life no matter the job or background of the employee.

While previous studies have reported positive links between need satisfaction and various indicators of well-being, few have reported whether these relationships are

independent from one another. Present findings indicate that experiences of competence, relatedness, and autonomy each account for a meaningful quantity of variance in job satisfaction, but leave uncertainty as to whether autonomy, over and above a sense of competence and relatedness, is important in fostering commitment and life satisfaction.

Overall the present findings support the contention that “supports for basic psychological needs in any relationship... play a crucial role in predicting feelings of attachment in that relationship” (Deci & Ryan, 2000, p. 262). By tying need satisfaction to affective commitment this thesis has provided a bridge between SDT and a concept central to industrial-organizational research, and offers support for the argument that providing a work environment conducive to the satisfaction of basic psychological needs for competence, relatedness, and autonomy is a win-win proposition for employers and employees.

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Appendix A
List of Measures

The following items were used to assess the six key constructs examined in the present study. Each item was accompanied by five response options with the middle being a neutral option.

Competence at Work (Five point scale of agreement)

I do not feel very competent when I am at work (Reverse-scored).

Most days I feel a sense of accomplishment from working.

At work I do not get much of a chance to show how capable I am (Reverse-scored).

I have been able to learn interesting new skills on the job.

Relatedness at Work (Five point scale of agreement)

I get along well with people at work.

People at work are not very friendly towards me (Reverse-scored).

I consider the people I work with to be my friends.

I pretty much keep to myself when I am at work (Reverse-scored).

Autonomy at Work (Five point scale of agreement)

I feel like I can make a lot of inputs to deciding how my job gets done.

I feel pressured at work (Reverse-scored).

I am free to express my ideas and opinions on the job.

There is not much opportunity for me to decide for myself how to go about my work (Reverse-scored).

Job Satisfaction (Five point scale of satisfaction)

Your workload while serving with NAVRES.

Your working relationship with your immediate supervisor.

Opportunities for advancement.

The pay and allowances you receive for the work you do.

Overall how satisfied are you with current job/position in NAVRES?

Satisfaction With Life Scale (Five point scale of agreement)

In most ways my life is close to ideal.

The conditions of my life are excellent.

I am satisfied with my life.

So far I have gotten the important things I want in life.

If I could live my life over I would change almost nothing.

Affective Commitment (Five point scale of agreement)

I feel like “part of the family” in NAVRES.

NAVRES has a great deal of personal meaning for me.

I feel a strong sense of belonging in NAVRES.

I feel emotionally attached to NAVRES.

Appendix B:
Between Group Differences Revisited

In the course of data analysis, between group differences based on gender, rank, full versus part-time status and static versus operational working environment were examined. When examining differences in terms of the strengths of relationships between the various constructs by way of regression, numerous statistically significant differences were evident. Included in the following table are differences where the Beta associated with the interaction term exceeded 0.2. While they were statistically significant, the differences were not meaningful, as illustrated by the R^2 change terms associated with the interaction terms.

Table B-1: Between Group Differences

<i>Relationship</i>	<i>Men</i>	<i>Women</i>	<i>B (Interaction)</i>	<i>R² Change</i>
Competence & Job Sat.	.421*	.508*	.217*	.001
Relatedness & Job Sat.	.250*	.347*	.345*	.001
Autonomy & Job Sat.	.362*	.476*	.328*	.005
Competence & Life Sat.	.274*	.115*	-.396*	.005
Relatedness & Life Sat.	.286*	.110*	-.562*	.006
Autonomy & Life Sat.	.239*	.064	-.346*	.005
<i>Relationship</i>	<i>NCMs</i>	<i>Officers</i>	<i>B (Interaction)</i>	<i>R² Change</i>
Job Sat. & Commitment	.406*	.321*	-.277*	.002
Job Sat. & Life Sat.	.289*	.211*	-.290*	.002
<i>Relationship</i>	<i>Full-time</i>	<i>Part-time</i>	<i>B (Interaction)</i>	<i>R² Change</i>
Competence & Life Sat.	.274*	.199*	-.310*	.002
<i>Relationship</i>	<i>Static</i>	<i>Operational</i>	<i>B (Interaction)</i>	<i>R² Change</i>
Relatedness & Job Sat.	.261*	.392*	.291*	.001
Autonomy & Job Sat.	.373*	.554*	.208*	.002
Job Sat. & Life Sat.	.259*	.367*	.209*	.001

* = significant at $p < .01$