

Predicting Elements of Grit through Problem-Solving Ability

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### Abstract

Grit plays a significant role in achievement, and other benefits of having grit are well documented, but what predicts grit? That is, what makes people ‘gritty’? To approach this question, this study investigated grit’s relationship with problem-solving ability. Participants ( $n = 71$ ) completed self-report measures of grit and problem solving proficiency, along with problem-solving and perseverance tasks which were used to substantiate the self-reported measures. Results revealed a correlation between grit and problem solving ability that remained significant after controlling for socially desirable responding. Future studies should take an experimental and / or longitudinal approach to examine whether problem solving has a causal relationship to grit.

### Predicting Elements of Grit through Problem-Solving Ability

Having grit (i.e. perseverance and passion for long term goals) has been associated with numerous benefits. Grit is strongly correlated with self-control (Abuhassan & Bates, 2015; see Duckworth & Gross, 2014 for a discussion), conscientiousness (Abuhassan & Bates, 2015; Duckworth, Peterson, Matthews, & Kelly, 2007), life satisfaction, happiness (Singh & Jha, 2008), and positive affect (Hill, Burrow, & Bronk, 2014; Singh & Jha, 2008). Gritty people also have higher GPAs (Duckworth & Quinn, 2009), achieve higher levels of education (Duckworth et al., 2007; Duckworth & Quinn, 2009), and are more likely to attain their goals (Sheldon, Jose, Kashdan, & Jarden, 2015). Furthermore, having grit is associated with engagement in moderate-high intensity exercise (Reed, Pritschet, & Cutton, 2013), and also serves as a buffer between negative life events and suicidal ideation (Blalock, Young, & Kleiman, 2015).

Correspondingly, grit deficits have been affiliated with numerous drawbacks such as failure to complete college and other similarly arduous tasks (Duckworth et al., 2007). Furthermore, grit deficits appear to coincide with neuroticism (Duckworth et al., 2007; Duckworth & Quinn, 2009) - a Big Five trait linked to depression (Schmitz, Kugler, & Rollnik, 2003), disinhibition (Gardiner, Jackson, & Loxton, 2015), and materialism (Watson, 2014). Individuals with lower grit levels also tend to have hedonistic orientations towards happiness (Von Culin, Tsukayama, & Duckworth, 2014), a perspective associated with increased vulnerability to obesity (Coccorello, D'Amato, & Moles, 2009).

While the above characteristics suggest the importance of having grit, efforts to examine how grit may be increased have been problematic because many of grit's strongest correlates are inextricably linked to, or may be psychometrically indistinguishable from, grit itself. For instance, one study found that having a commitment to a purpose predicted an increase in grit

over the course of the semester (Hill, Burrow, & Bronk, 2014); however, if someone commits to a purpose they have already demonstrated a grit-like attitude.

Adding to this complexity is the growing body of research questioning if grit is, in fact, an independent construct, and (if so) what the structure of that construct might be. Grit, as it is typically measured, is comprised of two subscales: Perseverance of Effort and Consistency of Interests. While there is research supporting the independent predictive ability of the Perseverance of Effort facet for achievement (Abuhassan & Bates, 2015) and GPA (Crede, Tynan, & Harms, 2016) Consistency of Interests fails to emerge as a separate facet independent of other well-known achievement predictors, like conscientiousness (Abuhassan & Bates, 2015). Unfortunately, most research on grit has neglected to independently analyze grit's subscales. As such, how each of these facets have contributed to a majority of observed results is largely unclear. It is also unclear the degree to which observed relationships might be better explained by some third variable like conscientiousness. This lack of clarity serves to highlight the importance of examining grit subscales separately, going forward.

Another challenge to developing grit is presented when grit correlates, themselves, are essentially immutable. For example, one recommendation for developing grit involves fostering a growth mindset (Duckworth, 2013) – a concept entailing the belief that one's abilities are not fixed but can be improved with effort (Dweck, 2006). However, a person's mindset is shaped during childhood, and changing an adult's mindset, something known as attribution retraining, is extremely onerous (Berk, 2013). Indeed, most aspects of personality become more stable with age (Roberts & DelVecchio, 2000), and are not directly amenable to change (Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2014). Rather, evidence suggests personality can more effectively

be impacted *indirectly* via the development of tools aimed at altering behavior (Chapman, Hampson, & Clarkin, 2014).

The current research provides an initial exploration of the viability of one such potential tool: problem-solving ability. Specifically, we focus here on Social Problem-Solving ability - a term coined to indicate facility in dealing with problems encountered in everyday life (D’Zurilla & Nezu, 1982). According to Social Problem-Solving theory, ability to solve life’s problems depends on emotional, cognitive, and skill-based elements (Nezu, Nezu, & D’Zurilla, 2013). We suggest that one reason people struggle to persevere in their goals is because they are unable to see a feasible path to that goal when obstacles (inevitably) arise. In other words, perhaps it is not a lack of *will* to persevere, but a mistaken judgment that perseverance would be to no avail, that leads people to abandon difficult goals and fail, ultimately, to develop grit.

Unlike other observed predictors of grit, there is evidence that Social Problem-Solving ability is a skill that can be trained. Social Problem-Solving therapy significantly increases ability to solve problems (McMurrin, Huband, & Duggan, 2008) by helping people develop a positive problem orientation, increasing problem-solving self-efficacy, and providing education about a variety of problem-solving skills (Nezu et al., 2013). This therapy has been utilized to treat certain debilitating conditions such as depression (Dowrick et al., 2000; Lerner & Clum, 1990; Nezu & Perri, 1989) and Generalized Anxiety Disorder (Dugas et al., 2003; Ladouceur, Léger, Dugas, & Freeston, 2004; Provencher, Dugas, & Ladouceur, 2004). It has also been useful in the treatment of personality disorders (Huband, McMurrin, Evans, & Duggan, 2007), whereby problem-solving ability serves as a mediating variable between dimensions of personality and associated disorders (McMurrin, Oaksford, & Christopher, 2010). This suggests that even if

successful problem-solving therapy could not directly increase grit, it may still attenuate some of the negative effects of grit deficits.

Some empirical evidence of a connection between grit and problem-solving ability can already be observed through their mutual correlates. Conscientiousness is the strongest known correlate of both grit (Duckworth et al., 2007; Duckworth & Quinn, 2009; Hill et al., 2014) and of problem-solving ability (D'Zurilla, Maydeu-Olivares, & Gallardo-Pujol, 2011). Another shared correlate is neuroticism, with neurotic individuals tending to not only be less gritty (Duckworth et al., 2007; Duckworth & Quinn, 2009; Hill et al., 2014) but also scoring lower on measures of problem-solving ability (D'Zurilla et al., 2011). Finally, positive affect seems to predict both level of grit (Hill, Burrow, & Bronk, 2014; Singh & Jha, 2008) and problem-solving proficiency (D'Zurilla, et al., 2011).

While the aforementioned studies certainly *suggest* a link between grit and problem solving, through their relationships to other variables, this research seeks to demonstrate the link directly. We predict participants' perceptions of their own problem-solving ability will positively predict their reported levels of grit, and that this relationship will persist after controlling for socially desirable responding. Additionally, we will examine whether this relationship operates differently for the two subscales of grit discussed above. Based on previous research (Abuhassàn & Bates, 2015; Credé, Tynan, & Harms, 2016) we predict the Perseverance of Effort facet will be most influential in this relationship. Should the predicted relationships emerge, this may pave the way for future studies to examine a causal relationship between these variables.

## **Method**

### **Participants**

Participants in this study included undergraduate students at the University of Wisconsin, Superior and volunteers recruited via social media. Undergraduate students received partial course credit for their participation. One-hundred and six individuals initiated the survey. Participants who did not sufficiently complete the survey (either by finishing the survey in fewer than 10 minutes or by failing to complete the entire survey) were excluded, leaving a sample size of 71 participants. Participants were asked to identify which age and racial / ethnic categories they belonged to. Twenty-nine participants reported being age 18-24, eleven as 25-34, ten as 35-44, seven as 45-54, eight as 55-64, four as 65-74 and one as 75+. Sixty-one participants identified as Caucasian, one as Hispanic, one as Black or African American, one as Asian, and six as Other.

### **Materials**

A brief Hobbies and Interests Survey (see Appendix A) was created for this study in order to assist participants in achieving a more realistic view of their perseverance level prior to completing the measure of grit. The Grit-O scale used for this study was developed by Duckworth, Peterson, Matthews and Kelly (2007) and consists of 12 items with two subscales: Consistency of Interests (e.g. *I often set a goal but later choose to pursue a different one*) and Perseverance of Effort (e.g. *I am a hard worker*) (see Appendix B for all items). Participants' responses were averaged, reverse-coding where necessary, to form a composite measure of their perceived level of Grit ( $M = 4.14$ ,  $SD = 0.71$ ,  $\alpha = .80$ ). We also calculated subscale scores for Perseverance of Effort (PE:  $M = 4.54$ ,  $SD = 0.72$ ,  $\alpha = .74$ ) and Consistency of Interests (CI:  $M = 3.78$ ,  $SD = 0.88$ ,  $\alpha = .75$ ). Because we were reliant on self-report measures in this study, and because both grit and problem-solving ability are societally favored traits, we embedded within the grit scale seven items measuring socially-desirable responding (e.g. *I take out my bad moods*

*on others now and then*), taken from the SDS-17 (Stöber, 2001). Participants' responses were averaged, reverse-coding where necessary, to serve as a measure of social desirability bias ( $M = 4.34$ ,  $SD = 0.73$ ,  $\alpha = .69$ ), which was used as a control variable in our principle analyses. To gauge the criterion validity of our self-report grit measure, a perseverance task was developed for this study consisting of one logic problem (Gurney-Read, 2014), which was altered to be unsolvable (see Appendix C). Total time spent working on the problem served as our measure of perseverance.

Participants' perceptions of their problem-solving ability were measured using a shortened 18-item version of the Problem Solving Inventory [PSI] (Heppner, 1982) consisting of the PSI-PSS, PSI-PSSE (Maydeu-Olivares & D'Zurilla, 1997) and two additional original PSI items (see Appendix D for a list of items used). Responses to the items were averaged, reverse-coding where necessary, to yield a measure of participants' self-reported problem-solving skill ( $M = 4.44$ ,  $SD = 0.72$ ,  $\alpha = .89$ ). In order to assess the criterion validity of our self-report measure of problem solving ability, several situational judgment tasks (SJTs) were adapted (with permission) from those found on the Assessment Day (2014) website (see Appendix E). We chose these tasks because they focused on a relevant, everyday sort of problem-solving ability – how one assesses the challenges life presents and makes proactive decisions about how to proceed. These tasks complimented the problem-solving scale we chose, which the authors of the scale define as a measure of an individual's self-efficacy and skill in personal problem solving. Participants' responses to these items were coded such that lower scores represent superior responses to the situations posed (see Appendix F for further detail about scoring).

## **Procedure**

The survey was administered using Qualtrics. Participants were either emailed a link to the survey or received this link via a social media site. Participants took the survey at the time and place of their choosing but were asked to complete the survey in one sitting. Scales appeared in the order described above, except for the perseverance task, which concluded the survey and was followed by a brief demographic questionnaire.

### Results

Before proceeding to the primary analysis, we first assessed the criterion validity of our measures. Self-reported grit scores predicted perseverance on the unsolvable logic task,  $r(71) = .26, p = .03$  (participants who reported themselves as being grittier also worked longer to complete the unsolvable problem), and PSI scores predicted scores on the SJTs,  $r(71) = -.26, p = .03$  (participants who reported having better problem-solving ability also recognized the more effective responses in the scenarios posed), lending support to the construct validity of our self-report measures.

Turning to the primary analysis, participants' perceptions of their own problem-solving ability significantly predicted their self-reported Grit scores,  $r(71) = .55, p < .001$ . This relationship remained significant after controlling for socially desirable responding,  $r(71) = .29, p = .02$ .<sup>1</sup>

Turning to examine the grit subscales separately, participants' self-perceptions of problem-solving ability significantly predicted scores on both Perseverance of Effort (PE),  $r(71) = .61, p < .001$  and Consistency of Interests (CI),  $r(71) = .33, p < .01$ . However, after controlling for socially desirable responding, this relationship only remained significant for PE,  $r(71) = .39, p = .001$ , whereas the relationship with CI disappeared,  $r(71) = .05, p = .66$ .

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<sup>1</sup> This correlation was even stronger when participants who failed to complete the survey through to the end (the situational judgment and perseverance tasks) were included in the analysis,  $r(77) = .35, p < .01$ .

### Discussion

The results of this study supported our hypothesis that grit was significantly related to social problem-solving ability. While this is the first study to assess the relationship between these two variables directly, the detection of a significant relationship is consonant with previous research indicating grit and problem solving interact in similar ways with conscientiousness, positive affect, and neuroticism (Abuhassan & Bates, 2015; D’Zurilla et al., 2011; & Hill et al., 2014).

Also in line with our prediction, the subscales differed in their relationship to problem-solving, with Perseverance of Effort (PE) emerging as the stronger of the two. Indeed, only PE correlated with the PSI after controlling for social desirability. This aligns with the results of previous research indicating the Consistency of Interests (CI) facet is factorally indistinguishable from conscientiousness (Abuhassan & Bates, 2015) when one considers the observation that conscientiousness is often inadvertently captured by social desirability scales (Connelly & Chang, 2016).

One limitation is that, like many other studies in this area, our primary analysis relied on self-report measures. However, by incorporating perseverance and situational judgment tasks, we endeavored to show our self-report measures were indeed related to possession of the qualities they were intended to assess. While this does not obviate the need for an experimental / multi-time point approach examining how a change in problem-solving ability predicts a subsequent change in grit, it does add credence to the concurrent validity of our measures. Another limitation is the lack of diversity in our sample, as it was largely made up of undergraduates, who may not yet have encountered as many challenges as the general population, and therefore may not have a realistic perspective on their ability to persevere through such challenges.

However, if this is the case, one might expect to find ceiling or floor effects in terms of self-perceived grit, which was not observed. On the contrary, we observed a normal distribution of scores, with an average only slightly above the scale mean.

Because our data is indicative only of a *relationship* between grit and problem-solving ability, future studies should examine whether manipulating problem-solving ability (e.g., through some type of Social Problem-Solving therapy intervention) would effectively increase grit. There is evidence this type of behavioral approach to changing personality would be effective (Chapman, Hampson, & Clarkin, 2014; Magidson, Roberts, Collado-Rodriguez & Lejuez, 2014) as problem-solving therapy has already been utilized to temper neuroticism (Stillmaker & Kasser, 2013). Even with the current factor structure of grit in question, efforts to facilitate the development of grit would be worthwhile as there is empirical evidence that the Perseverance of Effort (PE) facet uniquely predicts achievement (Abuhassan & Bates, 2015), GPA (Crede et al., 2016) and self-regulated learning (Wolters & Hussain, 2015), even after accounting for other well-known predictors like conscientiousness.

Some may argue that since grit plays only a modest role in success (Crede et al., 2016), the development of an intervention to increase it would be a wasted effort. However, the observed modest correlation between grit and success may partly result from the somewhat narrow focus of grit research thus far. Grit has primarily been examined in relation to very specific types of achievement (e.g. GPA, program completion, contest placement) within relatively high achieving populations (e.g. college students, West-Point cadets, national spelling bee participants) (see Duckworth et al., 2007 & Credé et al. 2016). Perhaps we would gain new insight into the role of grit by exploring different domains of success (e.g., parenting, marriage, mental health, and substance abuse). Furthermore, besides restricting grits known applicability

the predominant utilization of high-achieving populations for grit research has resulted in ignorance of how grit (or lack thereof) is impacting vulnerable populations (e.g. homeless, substance-addicted, and mentally ill individuals) who likely stand to benefit from this research the most. If problem-solving interventions prove effective in modifying grit, future research should further analyze the role of grit within these vulnerable populations.

In summary, even though the benefits of having grit are well documented, methods of increasing grit have remained difficult to define. This research demonstrated a positive relationship between level of grit and problem-solving ability, providing a foundation for future research to assess how problem-solving interventions impact grit. The current project also aligned with other recent work in identifying issues with the presently understood factor structure of grit, with one facet failing to predict problem solving after removing the variance accounted for by socially desirable responding. We suggest that grit research needs to be diversified to new domains and sample types in order to fully understand the potential and limitations of this construct.

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## Appendix A

Please list your three most significant hobbies/interests. Think of things that require effort, time, or dedication to master -- **do not** include pastimes such as hanging out with friends, playing video games, watching TV, reading, or listening to music, etc.

Activity 1:

Activity 2:

Activity 3:

At what age did you begin engaging in each of these hobbies/activities?

Activity 1:

Activity 2:

Activity 3:

How long did you engage in these hobbies/activities? If you are still currently doing so indicate 'to present'.

Activity 1:

Activity 2:

Activity 3:

How often do you engage in these hobbies/activities?

Activity 1:

Activity 2:

Activity 3:

How much time (on average) do you spend trying to improve upon or maintain these hobbies/interests? If the hobby/interest is seasonal, answer according to how much time you spend engaged in that activity when it is in season. If no longer engaging in this activity, select N/A.

Less than 1 hour per month	2-3 hours per month	1 hour per week	2-3 hours per week	More than 3 hours per week	N/A
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Time spent in activity 1:

Time spent in activity 2:

Time spent in activity 3:

## Appendix B

## Social Desirability/Grit scale

\*Items were reverse coded

1	2	3	4	5	6
Not like me at all					Very much like me

*Perseverance of Effort*

I am diligent. (I consistently put forth effort to do things well)

Setbacks don't discourage me.

I finish whatever I begin.

I have achieved a goal that took years of work.

I am a hard worker.

have overcome setbacks to conquer an important challenge.

*Consistency of Interests*

I become interested in new pursuits every few months. \*

New ideas and projects sometimes distract me from previous ones. \*

My interests change from year to year. \*

I have difficulty maintaining my focus on projects that take more than a few months to complete. \*

I have been obsessed with a certain idea or project for a short time but later lost interest. \*

I often set a goal but later choose to pursue a different one. \*

*Social Desirability*

I always stay friendly and courteous with other people, even when I am stressed out.

Sometimes I only help because I expect something in return. \*

I occasionally speak badly of others behind their back. \*

I take out my bad moods on others now and then. \*

I always admit my mistakes openly and face the potential negative consequences.

In traffic I am always polite and considerate of others.

When I have made a promise, I keep it – no ifs, ands or buts.

## Appendix C

**It's Alan's birthday and he's having a party.**

Seven other people will attend. Everyone will sit around the dining table. The seating arrangement must meet the following conditions:

*Amy and Alan do not sit together.*

*Brad and Beth sit together.*

*Charles sits next to either Debbie or Emily.*

*Frances sits next to Debbie.*

*Neither Amy nor Alan sits next to either Brad or Beth.*

*Brad does not sit next to Charles or Frances.*

*Debbie and Emily do not sit next to each other.*

*Alan does not sit next to either Debbie or Emily.*

*Amy does not sit next to Charles.*

Where should everyone sit?



Guests: Amy, Brad, Beth, Charles, Debbie, Emily, Frances

## Appendix D

\*Items were reverse coded

# Items from original PSI not PSI-PSS, PSI-PSSE

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Not like me at all					Very much like me

When a solution to a problem has failed, I do not examine why it didn't work. \*

When my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation. \*

After following a course of action to solve a problem, I compare the actual outcome with the one I had anticipated.

When I have a problem, I think of as many ways to handle it as I can until I can't come up with any more ideas.

I have the ability to solve most problems even though no solution is immediately apparent.

Many of the problems I face are too complex for me to solve. \*

When considering solutions to a problem, I do not take time to assess the potential success of each alternative. \*

When confronted with a problem, I stop and think about it before deciding on the next step.

When making a decision, I compare alternatives and weigh the consequences of one against the other.

When I make plans to solve a problem, I am almost certain that I can make them work.

I try to predict the result of a particular course of action.

Given enough time and effort, I believe I can solve most problems that come my way.

When faced with a novel situation, I have confidence that I can handle problems that may arise.

I trust my ability to solve new and difficult problems.

When thinking of ways to handle a problem, I seldom combine ideas from various alternatives to arrive at a workable solution. \*

When confronted with a problem, I usually first survey the situation to determine the relevant information.

I make snap judgments and later regret them. \*#

Sometimes I get so charged up emotionally that I am unable to consider many ways of dealing with my problems. \*#

## Appendix E

**Scenario 1**

As an employee of Target you are responsible for providing exceptional customer service while demonstrating product knowledge to maximize sales. You work primarily on the sales floor in the electronics department, however all Target employees work as a unified team and therefore you are often required to work in other sections throughout the store.

**Situation 1**

You are working at the main checkout lane on a busy Saturday afternoon. Suddenly the credit card transaction system stops working and one of the team leaders tells you that it will be 15 minutes until the system provider can fix the problem. There is a long line of customers waiting to check out.

Review the following responses and indicate whether you believe the response to be **1- The most effective response, 2- The second most effective response, 3- The third most effective response or 4- The least effective response**. You may assign each rating only once

- A) Talk to the team leader and suggest that someone goes down the line of customers informing them of the problem and how long it will take to resolve. This will prevent customers from lining up if they do not have cash or a checkbook.
- B) Continue serving customers and apologize about the lack of availability of credit card payment.
- C) Ask the team leader what to do
- D) Take the opportunity to take your afternoon break as it appears that most customers will have to come back later when the system is working again.

**Situation 2**

At the last team meeting you were informed that DVD sales have plummeted. It is suspected this is because many people are streaming movies off the internet. In spite of that, you have been asked by your team leader to work towards increasing sales of DVD's by 15%. You will not have any extra budget available to achieve this goal.

Review the following responses and indicate whether you believe the response to be **1- The most effective response, 2- The second most effective response, 3- The third most effective response or 4- The least effective response**. You may assign each rating only once

- A) Put a hand-written poster near the register promoting the great range of DVD's Target carries.
- B) Pick out a selection of newly released DVD's and place them in a popular section of the electronic department.
- C) Tidy up the area where the DVD's are located and make them look as presentable as possible.
- D) Approach as many customers as possible, politely mention to them that Target has a great range of DVD's, and show them where they are located.

## **SCENARIO 2**

You are a Human Resources Generalist working in the HR department of St. Catherine's Hospital. Your role is to carry out administrative tasks such as payroll, hiring and training of new staff, and maintaining personnel records. You report to one of two HR managers who in turn report to the HR Director. Your manager is Diana Maxwell.

### **Situation 1**

Diana Maxwell has delegated a project to you regarding the new hire training course. The course has been run internally by Diana and her colleague for the past few years but now her role has become busier and the HR Director wishes to hire a professional training company to conduct the course.

Your role has involved seeking out training companies to bid on the job while gathering information on their price to design and run the course, the experience of their trainers, their expertise of St. Catherine's, and other relevant information.

There are 20 companies who have bid for the job and Diana wants a shortlist of five who will be requested to come in for an interview. She has asked you to shortlist the bidding companies over the next two days.

Review the following responses and indicate whether you believe the response to be **1- The most effective response, 2- The second most effective response, 3- The third most effective response or 4- The least effective response**. You may assign each rating only once.

- A) Place all 20 companies on a grid and allocate points on a 1 to 5 scale according to each factor about which you have information (e.g. a company might score '1' on the price but '5' on experience of their trainers)
- B) Order the companies in terms of their prices and shortlist the five lowest-priced bids since St. Catherine's should always be cost-conscious.

- C) Ask Diana and the HR director for their views on what the key criteria should be for shortlisting the bidders and use this information to structure your decision-making.
- D) Email a contact in another hospital who has done this type of thing before and ask for input on how to shortlist the bidders

### **Situation 2**

St. Catherine's has recently been suffering from a high turnover of nursing assistants with many leaving to work at the privately-run Lakewood hospital and rehabilitation clinic on the outskirts of the city. In the exit interviews, leavers have stated that by leaving they hope to increase their pay. Some of the leavers also mentioned that the attractions of the private hospital are its scenic location and its great range of staff facilities, including use of an indoor swimming pool. You have been asked to design and run a recruitment campaign to attract and appoint 10 new nursing assistants to the hospital. One of your measures of success will be the staying power of the new recruits. You have 4 weeks from now until the interviews for the nursing assistant candidates will be held.

Review the following responses and indicate whether you believe the response to be **1-the most effective, 2-the second most effective, 3-the third most effective, or 4-the least effective**. You may assign the rating only once.

- A) Place an advertisement immediately in all the relevant local media and online. Then spend some time designing a shortlisting process which will identify candidates with the sort of values that will translate into loyalty to St. Catherine's.
- B) Ask your colleague in the HR team what the process was last time the hospital recruited nursing assistants and follow that plan.
- C) Work back from the date of the interviews to establish when you might need to advertise the posts. Use the intervening time to draft an advertisement that would attract people whose values mean they are more likely to remain loyal to St. Catherine's.
- D) Ask local recruitment advertising agencies for advice on drafting a job posting that would attract the kind of people who are less likely to leave.

**Scenario 3**

You are in training at a Ford automobile manufacturing plant. In order to learn the ropes before being assessed for a management position you are to spend 3 months in each of the 4 departments of the company. You have already completed your placements in the Material Planning and Logistics department, the Manufacturing and Engineering department, and are currently half way through your 3 months in the Human Resource department. Your final placement will be in the Finance Department.

**Situation**

You received an email from a senior manager in the Finance department, Kelly Brighton, who will be your supervisor once you join the team in just over a month. You will be starting in Finance in January which is the peak financial planning season. The staff will be working to produce the annual business plans and budget allocations for each department in the Ford Manufacturing plant. Your supervisor feels that it is very important you are aware of this so you can ‘hit the ground running’ when you join the team. You have never worked in a finance role before.

Review the following responses and indicate whether you believe the response to be **1-the most effective, 2-the second most effective, 3-the third most effective, or 4-the least effective**. You may assign the rating only once.

- A) Search on the internet for information about business planning, budgeting and profit & loss calculation.
- B) Email Kelly and ask whether it would be possible to have a one-to-one meeting with her before you begin your placement to find out as much as possible about the projects on which you might be working.
- C) Thank Kelly and say you will contact her in December, a few weeks before your placement, and ask for specific details of your projects.
- D) Email Kelly thanking her for her early warning. Ask her whether she can provide any information on the projects which you might be working on in January.

## Appendix F

For each SJT, participants ranked the four available options. Each response was then assigned a discrepancy score, meaning the participant's ranking was subtracted from the correct ranking of that option. Absolute values of these discrepancies were summed to yield the total discrepancy from the optimal response pattern for that SJT (see example below).

We examined inter-item correlations among all the discrepancy scores and found that while these scores mostly correlated with one another (indicating consistency in performance on the tasks), the discrepancy scores for the second SJT (increasing DVD sales) did not correlate well with those from any of the other tasks. We therefore eliminated this SJT from our calculations to create a more internally reliable measure.

Example:

If the correct ranking for an SJT was:

- A) = 4
- B) = 1
- C) = 3
- D) = 2

And a participant's rankings were:

- A) = 4
- B) = 2
- C) = 3
- D) = 1

The discrepancy score was calculated as follows:

- A)  $4 - 4 = 0$
- B)  $2 - 1 = 1$
- C)  $3 - 3 = 0$
- D)  $1 - 2 = -1 = 1$  (absolute value)

The participant's total discrepancy score for this SJT would be 2.