**Intervention to Foster Purpose in Older Adults**

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**Author Note**

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**Abstract**

This study examined whether purpose in life could be intentionally fostered in a group (n=90) of adults 55 years and older. The group was randomly assigned into treatment and waitlist control. The treatment group were given an in-depth purpose discover coaching tool to complete which comprised of a self discovery component and a component that helped them match their newfound understanding of themselves with a niche in the universe. Survey instruments were used and an analysis of the data found a significant increase in sense of purpose in the treatment group versus the waitlist control group.

*Keywords:* purpose in life, seniors,

**Intervention to Foster Purpose in Older Adults**

In the last decade psychologists have focused on purpose in life as a construct that could potentially positively impact of people in multiple domains. An analysis of an English Longitudinal Study of Ageing, showed that a sense of purpose and meaning in life is associated with increased survival amongst older adults (Steptoe, Deaton & Stone, 2014). This confirmed other findings that indicate that purpose in life (or simply “purpose”) can act as a buffer against mortality across the lifespan (Hill & Turino, 2014) and that it is associated with a reduced risk of all-cause mortality among community-dwelling older persons (Boyle, et al., 2009; Sone et al., 2008). Purpose has also shown to be associated with improved health outcomes and is thus correlated with a reduced risk of Alzheimer’s disease and mild cognitive impairment and reduction in the deleterious effects of Alzheimer’s pathologic changes on cognitive function for people who already suffered from the disease (Boyle, et al., 2010) so that they will exhibit better cognitive function (Boyle, et al., 2012). There also is a general positive relationship between purpose and good cardiovascular health (Sone et al., 2008; Skrabski et al., 2005) and it has been shown that purpose could be a protective factor against myocardial infarction among high-risk groups with coronary heart disease (Kim, et al., 2013). It has also been associated with higher levels of HDL cholesterol, lower hip-waist ratio, and significantly flatter slopes of salivary cortisol (Ryff, et al., 2006).

Purpose is also associated with increased psychological health including significant reduction in depression (Westerhof, et al., 2010) and a significantly lower prevalence of symptoms such as pain and insomnia (Haugan, 2013) and an increase in overall life satisfaction (Zika & Chamberlain, 1992; Peterson, Park & Seligman, 2005; Thoits, 2012), psychological well-being and Positive Affect and is negatively correlated with psychological distress (Thoits, 2012) and Negative Affect (Zika & Chamberlain, 1992). Purpose has also shown to modertae the effect of negative mood as a result of being on trains with people ethnically diverse from themselves (Burrow & Hill, 2013), moderate changes in Life Satisfaction due changes on personal circumstances (Burrow, Sumner & Ong, 2013) and may also be the moderating factor in why religious affiliation seems to increase happiness and well being (Wnuk & Marcinkowski, 2012; Aghababaei & Blachnio, 2014).

Purpose is also correlated with a reduction is perceived stress amongst menopausal women (Abdelrahman & Abushaikha, 2013), and with an increase in the density of right insular cortex Grey Matter volume (something that is negatively correlated with depression) (Lewis, Kanai, Rees & Bates, 2013). Purpose has also been shown to have a strong relationship with positive self-concept, (Phillips, Watkins & Noll, 1974; Reker, 1977; Bigler & Neimeyer, 2001), in a controlled study, greater purpose as associated with increased oral control in sufferers of Anorexia Nervosa (Tomba, et al., 2014), and positively linked to self-esteem, a sense of mastery and physical health (Thoits, 2012), Time Competency, Self Actualizing Values, Self Regard and Nature of Man on the Personal Orientation Inventory Scale (Phillips, Watkins & Noll, 1974), overcoming life crises and stresses (Stevens, Pfost & Wessels, 1987, Debats, Drost & Hanson, 1995; Jim, et al., 2006) and is vital for a successful and fulfilling career (Duffy & Dik, 2013; Dik, Steger, Gibson, & Peisner, 2011).

Given the importance of purpose and the many positive effects it is correlated with it is worthwhile considering whether it can be intentionally fostered in an adult population, specifically one over the age of fifty-five where it may impact survival and longevity (Steptoe, Deaton & Stone, 2014). However, there is a significant gap in our knowledge of how purpose can be intentionally fostered long term. There are even fewer actual interventions that are designed to foster purpose in an older population. The current study, using a sample of people fifty-five years old or older and an experimental design examined whether a purpose fostering intervention can intentionally increase an individual's sense of purpose as well as other indicators of well-being over time. The present study’s participants were recruited using the media as well as more established advertising methods and were then randomly assigned to either the intervention group or a waitlist control.

**Definition of Purpose**

Whilst there is disagreement with regards the definition of purpose, in the present study purpose is defined as having a cognitive component and an action component. The cognitive component includes an understanding of self and of the world around the self. The action component is the actionable purposeful life that results for matching the self to the needs of the world outside of the self (Steger, 2012, Wong, 2012) – a purposeful niche. Most often this will include a concern that goes beyond the self (Damon, 2008).

**Method**

**Participants**

Participants were recruited from a brief as well as an article that was placed in the local newspaper as well as a statewide newspaper and through emails sent out to his email lists by the author. Participants (*N* = 88) were from twenty states within the United States with the rest coming from other countries (USA 81, Israel 2, UK 3, Nigeria 2) ages between 50 and 85 (mean age = 62.80, SD = 6.131) and 41 (46.6%) were male and 47 (53.4%) were female. Additionally, 81 (92%) identified as white, 3 (3%) identified as Hispanic or Latino and 4 (5%) as Other.

For this study an adult purpose intervention was created that involves online video coaching. No one-on-one or group coaching was offered. The entire intervention was done online at the participants’ own convenience. Phone and email support was offered at an as-needed basis. 88 participants were recruited and a randomized control study was conducted using a wait list control model.

Of the 88 participants half (n=44) were randomly assigned to a control group and half (n=44) to an intervention group. A waitlist control model was used so both groups would have an opportunity to receive the purpose intervention. This randomized experiment study using a Pretest-Posttest control group design (Shadish, Cook & Campbell, 2002 p. 261) to test whether the Purpose intervention in fact causes an increase in purpose and other indicators of psychological Well Being and eudaimonia in the participants.

**Research Questions and Hypothesis**

1. Does the intervention cause an increase in purpose in the intervention group versus the control group? This question represents the primary hypotheses that there would be a significant increase in purpose from T1 to T2 in the intervention group and from T1 to T5 in the waitlist control group.

2. Does the intervention cause increases in other areas of psychological Well Being? This is the secondary hypothesis. It was predicted that there would be increases in the other measurements of Well Being that were being tested for.

**Measures**

To test the primary hypothesis of whether the intervention increased purpose we used the Meaning in Life Questionnaire (MLQ), developed by Steger, Frazier, Oishi, and Kaler (2006)

which measures both the presence of purpose and meaning in life and the search for meaning or purpose in life. The MLQ has proven to be one of the most psychometrically stable tests for meaning and purpose in life (Boyraz, Lightsey Jr. & Can, 2013). For the purposes of this study the presence of meaning was the primary factor of interest. Search for meaning however was also looked at as a secondary concern. The MLQ represents the definition of the construct of purpose the intervention endeavors to foster i.e. and understanding of what makes ones life meaningful and purposeful rather than activity focused.

Nonetheless, other measures of purpose were also used including such as the Life Engagement Test (LET) survey (Scheier, et al, 2006). Although the LET survey defines purpose in terms of meaningful activities using statements such as, “Most of what I do seems trivial and unimportant to me,” and “I value my activities a lot,” and thus reflects less accurately the definition of purpose the intervention is trying to foster. We also used Psychological Well-being, Purpose in Life scale (Ryff, 1989), which although well validated is not good at discriminating at high levels of well-being (Abbot, et al, 2010) and also focuses on activities rather than sense of meaning and purpose as has been defined by this study and the intervention being tested.

To test other areas of well-being the following survey instruments were used. Life satisfaction was also tested using the Life Satisfaction survey (Diener, 1985), which has been shown to have strong validation in a meta-analysis of studies (Vassar, 2008).

To test for sense of identity we used the sense identity scales taken from Resource Associates Transition to College Scale (RATTC) which was developed by Jaffe (1988). According to Lounsbury, Huffstetler, Leong, & Gibson, 2005, the RATTC scale strongly correlates with both Bennion and Adam’s (1986) Identity Achievement subscale (combined) of their Objective Measure of Ego Identity Status (r = .80, p < .01) and with White, Wampler, and Winn’s (1998) identity commitment subscale of the Identity Style Inventory (.60) which are also adult scales and therefore suitable for a survey of adults. In addition this scale was used because a similar purpose intervention is also being tested on adolescents and this ensured a consistency across all of the studies.

To test for happiness we used to scales, first the highly validated Subjective Happiness scale (Lyubomirsky & Lepper, 1999) was used as well as a happiness measure found in the PERMA profiler (Butler & Kern 2014, unpublished). Grit and resilience was also tested using Short Grit survey (Duckworth & Quinn, 2009) and PERMA profiler (Butler & Kern 2014, unpublished) respectively. Life Orientation Test-Revised (LOT-R) (Scheier, 2009) was used to measure optimism. Other aspect of PERMA (Positive Emotion, Engagement, Relationships, Meaning and Accomplishment) were tested using PERMA profiler (Butler & Kern 2014, unpublished).

**Study Design.**

Sample size was 88. The study was publicized in online forums, newspapers. Participants were randomly assigned to an intervention group or to a wait-list control group. Random assignment was conducted using R. Each group consisted of 44 participants.

**Data Analysis.**

By comparing changes across the two groups, the efficacy of the purpose intervention for promoting purpose development was assessed (Research Question 1). Valuable understanding of what coincides with changes in purpose was also tested. For instance, the survey data assessed whether changes in purpose commitment or exploration correlate with other benchmarks of well-being, (Research Question 3) as has been frequently suggested the previous literature.

The precursors and moderators of purpose development was also sought. Questions such as (a) are people more likely to develop a purpose when they start from a more positive foundation (i.e., are happier, further along in identity development)? These objectives were made possible by the proposed multi-wave study design, and was examined using sophisticated multi-level modeling techniques for analyzing longitudinal data. To analyze the data a two way repeated measures ANOVA was conducted testing the change across time by group. There was some attrition during the course of the study. For those who dropped out an intention to treat model was used and missing data was imputed using Amelia II (Honaker, 2011).

**Underpinning of Purpose intervention in Empirical & Theoretical Literature**

There following are the approaches taken in the purpose intervention.

**The will to meaning.** Frankl’s (1985) posits that it is important to awaken within an individual their “will to meaning,” *We should not, then, be hesitant about challenging man with a potential meaning for him to fulfill. It is only thus that we evoke his will to meaning from its state of latency* (p. 105). The purpose intervention starts with two exercises that are designed to inspire within the participant the desire to find purpose in life as well as withe the knowledge that they have a purpose.

**Purpose Intervention and Career Development Theories.** Whilst at one time retirement was seen as a time of winding down and when a person ultimately stops all forms of occupational work (Super & Jordaan, 1973), nowadays, however, many people see retirement as another stage of life and create new post retirement careers (Kim & Hall, 2012) as well as increased and more intense leisure activities and volunteering (Dorfman, 2012). In many ways therefore, retirement can be seen as a new stage in life that should involve intense preparation and thought akin to preparation for a career during adolescence and the college years (Kin & Hall, 2012). Thus, it is entirely congruent that the method used in the proposed purpose intervention uses the best practices and ideas that have emerged from both Career Development Theories and studies that have emerged from the field of youth development. Much of what intervention’s process was gleaned from studies that related to adolescents, yet it is hypothesized, that the same methods will work for, and hold true, across the lifespan and therefore will be studying the effect and efficacy of a virtually identical purpose intervention with adults as well as with youth.

**The connection between “sparks” or passions and purpose.** Benson (2008) argued, convincingly (Damon, 2008), that each human is born with = a “spark” that needs to be developed in order for them to thrive. Benson describes sparks as “The hidden flames in your kids that light their proverbial fire, get them excited, tap into their true passions,”(p. 2). Benson (2008), asserts that sparks are the “keys to unlocking purpose,” (p. 18). In line with this, the basis of the intervention if that participants identify their “sparks” and learn how those “sparks” can manifest into a purpose. This is also in keeping with Steger’s cognitive aspect of meaning *understanding of self, world and niche* (Steger, 2009, 2012).

**Elements that research suggest foster purpose**. The intervention has also combined 9 methods that current theoretical and empirical literature shows fosters purpose in youth and adults into a well-developed, comprehensive purpose-finding coaching intervention and curriculum, (see Bundick, 2011; Koshy & Mariano, 2011; Shamah, 2011 for reviews). Those 9 purpose-fostering approaches are:

1.  Goal identification (Koshy & Mariano, 2011).

2. Individuals reflect on how current activities relate to purposeful goals (Koshy & Mariano, 2011).

3. Identifying the steps needed to achieve purposeful goals (Schneider & Stevenson, 1999; Koshy & Mariano, 2011).

4. Individuals must be active in finding their purpose. Purpose cannot be found for them (Dik, Steger, Gibson & Peisner, 2011; Mascaro & Rosen, 2005, Yalom, 2002).

5. Knowledge of tools needed to reach purposeful goals (Schneider & Stevenson ,1999; Koshy & Mariano, 2011).

6. Seeing a direct path leading to purposeful goals (Schneider & Stevenson, 1999; Koshy & Mariano, 2011).

7. Proactively engaging in a purpose finding process (Hill, Sumner & Burrow, 2014).

8. Meaningful activity increases a sense of purpose in life (Eakman, 2014).

9. A will to meaning is needed (Frankl, 1985).

**Shape discovery leads to niche finding.** As suggested by Steger (2009) and Wong (2010), purpose is part of a process where the individual understands himself or herself, and based on that, finds a place where he or she uniquely fit in the world and then pursues that niche as their purpose. Thus, part one of the intervention helps the individual identify their “shape” based on their “sparks” and character strengths. Part two guides them to figure out where their “shape” uniquely fits in the world and what they are able to uniquely contribute to the universe as their purpose.

People searching for a purpose often means searching for a meaningful and purposeful future career  (Lanz, Rosnati, Marta, & Scabini, 2001; Yeager & Bundick, 2009) yet in terms of pending retirees searching for a post-retirement purpose in life they can be also searching purposeful unpaid activities to pursue (Dorfman, 2012). In each case the search is for specific activities that the individual will pursue that is meaningful and takes up their time. In this sense these activities can be seen as similar to trying to find a meaningful or purposeful career albeit one that is unpaid. Thus the purpose finding intervention incorporates elements from Career Development Theory.

Dietrich, Parker and Salmela-Aro (2012) argue that there are four career development theories.

1. Savickas’s career construction theory,

2. Hirschi and Lage’s and van Esbroeck et al.’s models of career decision making,

3. Vondracek et al.’s developmental-contextual model and Ford’s motivational systems theory,

4. Young et al.’s model of joint action projects. The purpose finding intervention takes into account elements from all of these career development theories.

According to Savickas (2002; 2005) there are four dimensions of an adaptive individual as they relate to career readiness and coping:

1. Career Concern: This means that the individual is future minded and has a concern for how what they do today will impact their career prospects tomorrow.

2. Career Control: This is where the individual actively and autonomously makes their own career-related decisions, and is intentional about what they do and how they do it.

3. Career Curiosity: This is where the individual goes through a process of self-discovery and career exploration and learns how the self might fit into the world around them.

4. Career Confidence: This refers to career self-efficacy where the individual has the confidence that he or she can succeed at the given career.

Savickas’ (2002) breaks the career exploration stage during these years down into three key types:

1. Crystallization: individuals undertake in-breadth self-exploration, leading to the development of their self-concepts. This then leads to career exploration and finally to the development of a vocational self-concept.

2. Specification: this is where an individual specifies vocational choices and then undertakes in-depth exploration of them. This helps the individual create a narrative where their understanding of themselves and their self-perception, leads to a self-concept that can manifest itself in a public vocational self-concept. This step is important for comparisons of alternatives leading in the declaration of a vocational choice (p. 174-175).

3. Actualization: This is where individuals take concrete actions in implementing their chosen career. In youth this is often during the school-to-work transition (pp. 176-177). As we will show below, the purpose intervention helps participants go through all of these stages of career exploration and adaptability.   
 Savickas’ theory is elaborated on by Hirschi and Lage (2007; 2013) in their six-phase model of career decision-making, which is:

1. Awareness: becoming concerned about career decision-making.

2. Self-exploration and then based on that gathering careers that may fit.

3. Narrowing down the amount of careers so that a more in-depth exploration of the career can take place.

4. Deciding which of the remaining few one will choose.

5. Confirming the choice and developing commitment towards it.

6. Making a firm decision and full commitment to the career choice.

Hirschi and Lage (2007) also maintain that career decision-making should contain two parts: in-breadth career exploration and then in-depth career exploration. The purpose intervention facilitates both in-breadth and in-depth career exploration (for reviews, see Dietrich, Parker and Salmela-Aro, 2012).

**Purpose in Retirement and Self-Concept**

As part of this post retirement career/activity exploration the individual will also develop his or her self-concept (Hendricks & Cutler, 1990, 2003; Lawton, 1993; O’Brien, 1988; Wang, 2007). The empirical literature confirms that purpose in life is correlated with a positive change in self-concept (Phillips, Watkins & Noll, 1974; Reker, 1977; Bigler & Neimeyer, 2001).

**Intervention**

The online tool used for the purpose intervention contains multiple exercises each with video instructions. For the career/activity exploration part of the intervention both career exploration and post-retirement activity (unpaid) exploration are offered, there is also an option for the participant to add their own career or activity if the one they are interested in exploring is not listed. The purpose intervention includes the following steps and activities:

Step 1 – The Will to Meaning

In this step, participants are coached through in-depth reflections and activities based upon the idea of purpose. These sessions help participants realize that they have a purpose in life and something unique to contribute. It also incorporates Frankl’s idea that the “will to meaning” needs to be inspired from its state of latency mentioned in the first section of the theoretical basis for the intervention.

Step 2 - Listing Passions

In this step, participants are coached to make a list of their passions. This is done by asking open-ended questions, which allow them to look deep inside themselves to find the things that they are passionate about and that they love to do. This exercise helps them autonomously identify their “sparks” or “passions.” Note that passions here refer to harmonious passions rather than those that are obsessive in nature (Vallerand, 2003). Participants then analyze each of their passions to determine the “aspect they enjoy” of each passion (i.e. competition, creativity, problem-solving, etc.). Once participants have identified all of their aspects, they are coached to analyze each aspect to find the “essence” of their passions. This will then represent the core motivation of each of their harmonious passions. Participants are then coached to determine if each “aspect” and “essence” is Abstract (more creative in nature) or Concrete (more problem solving oriented). Finally, participants take the Values in Action (VIA) Character Strengths Assessment (Peterson, & Seligman, 2002) and note their top ten character strengths. Participants are encouraged to change the order of their character strengths should they feel that the results of the VIA assessment was incorrect, this ensuring a sense of autonomy throughout this process (Ryan & Deci, 2012). This completes the process of discovering the “dimensions of their shape.”

This incorporates the ideas mentioned by Benson (2008) and Damon (2008) that spark identification often leads to purpose discovery. It also is in keeping with Steger (2009) and Wong’s (2012) definition of purpose/meaning. This is also found in Savickas’ (2002) “Career Curiosity” and Hirschi & Lage’s (2013) six stages of career decision making.

Step 3 - Discovering Purpose

In this step, participants match “dimensions of their shape” (aspects, essences and character strengths) discovered in step 2 with a corresponding shape that exists in the universe in terms of a career or post retirement unpaid activities. Participants then visualize each item on their list and rank them on a scale of 1-10 to see how passionate and excited they feel about each one and how well each fits their “shape.” This helps the participant narrow down their list after their in-breadth career exploration process. This is also in keeping with career development theory regard to in-breadth exploration and narrowing the list down (Hirschi & Lage, 2013).

Step 4 - Informational Interview

Participants find professionals in fields that scored 8 or higher in their visualizations to conduct informational interviews. Participants have the choice of either doing an informational interview or if that is not possible they have an option of doing an informational worksheet as part of their in-depth exploration. The idea of the interviews/worksheets is for participants to conduct in-depth exploration of the career or opportunities they think might be a manifestation of their purpose in greater depth to make sure it fits them perfectly (Hirschi & Lage, 2013).

Step 5 - The Road Map

In this step, participants chart a “Road Map” that is a comprehensive plan of action that details how they will reach their purposeful goal. It specifies the education, connections, knowledge and actions they will need in order to reach their purposeful goal. This is also in keeping with findings mentioned by Schneider & Stevenson (1999) of the benefit of having a fully developed plan.

Step 6 – The Age of Purpose

Step six is where the participants inform their friends that they also have a purpose and should try and live a purposeful life. This encourages what some have called an“Age of Purpose” (Damon, 2009).

**Results**

**Results for Sense of Identity**

Table with confidence intervals (without imputed data)

|  |  |  |  |
| --- | --- | --- | --- |
|  | est. | lower | upper |
| (Intercept) | 1.5245895 | 0.9449844 | 2.1041945 |
| GROUP1 | 0.4979467 | 0.1170106 | 0.8788829 |
| WAVE | 0.0928050 | -0.0752916 | 0.2609016 |
| BASELINE | 0.5917203 | 0.4602711 | 0.7231696 |
| GROUP1:WAVE | -0.0865771 | -0.3323579 | 0.1592037 |

Table with confidence intervals with imputed data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | results | se | (lower | upper) | missInfo |
| **(Intercept)** | 1.521 | 0.2964 | 0.9374 | 2.105 | 45 % |
| **GROUP1** | 0.4701 | 0.2094 | 0.05894 | 0.8814 | 28 % |
| **WAVE** | 0.08296 | 0.09339 | -0.1004 | 0.2663 | 28 % |
| **BASELINE** | 0.5964 | 0.06384 | 0.4705 | 0.7223 | 50 % |
| **GROUP1:WAVE** | -0.0532 | 0.1333 | -0.3151 | 0.2087 | 31 % |

Table with P-Value (without imputed data)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Value | Std.Error | DF | t-value | p-value |
| (Intercept) | 1.5245895 | 0.2971977 | 66 | 5.1298836 | 0.0000027 |
| GROUP1 | 0.4979467 | 0.1953284 | 66 | 2.5492793 | 0.0131262 |
| WAVE | 0.0928050 | 0.0850081 | 38 | 1.0917193 | 0.2818302 |
| BASELINE | 0.5917203 | 0.0674018 | 66 | 8.7790042 | 0.0000000 |
| GROUP1:WAVE | -0.0865771 | 0.1242938 | 38 | -0.6965522 | 0.490322 |

Table with P-Value (without imputed data)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Value | Std. Error | t-stat | p-value |
| **(Intercept)** | 1.518 | 0.2951 | 5.144 | 5.525e-07 |
| **GROUP1** | 0.4703 | 0.2217 | 2.121 | 0.0342 |
| **WAVE** | 0.08296 | 0.1002 | 0.8279 | 0.4079 |
| **BASELINE** | 0.5973 | 0.06203 | 9.629 | 5.829e-18 |
| **GROUP1:WAVE** | -0.0532 | 0.1426 | -0.3732 | 0.7091 |

**Life Engagements Results with Imputed data**

Table with confidence intervals with imputed data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | results | se | (lower | upper) | missInfo |
| **(Intercept)** | 1.026 | 0.3201 | 0.3969 | 1.656 | 36 % |
| **GROUP1** | 0.06319 | 0.2405 | -0.4089 | 0.5353 | 25 % |
| **WAVE** | -0.05339 | 0.1202 | -0.2901 | 0.1833 | 44 % |
| **BASELINE** | 0.8099 | 0.06509 | 0.6817 | 0.9381 | 44 % |
| **GENDER** | -0.04024 | 0.09033 | -0.2177 | 0.1372 | 32 % |
| **GROUP1:WAVE** | 0.1524 | 0.1582 | -0.1585 | 0.4633 | 34 % |

Table with confidence intervals without imputed data:

|  |  |  |  |
| --- | --- | --- | --- |
|  | est. | lower | upper |
| (Intercept) | 0.9626666 | 0.3098033 | 1.6155300 |
| GROUP1 | 0.0551478 | -0.3466062 | 0.4569018 |
| WAVE | 0.0027513 | -0.1596805 | 0.1651832 |
| BASELINE | 0.7935943 | 0.6381842 | 0.9490045 |
| GROUP1:WAVE | 0.1325256 | -0.1028432 | 0.3678944 |

Table with P-Value with imputed data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Value | Std. Error | t-stat | p-value |
| **(Intercept)** | 0.9734 | 0.3048 | 3.194 | 0.001546 |
| **GROUP1** | 0.0651 | 0.2561 | 0.2542 | 0.7994 |
| **WAVE** | -0.05342 | 0.1277 | -0.4183 | 0.676 |
| **BASELINE** | 0.8076 | 0.06233 | 12.96 | 1.194e-29 |
| **GROUP1:WAVE** | 0.1524 | 0.1698 | 0.8976 | 0.3698 |

Table with P-Value without imputed data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Value | Std.Error | DF | t-value | p-value |
| (Intercept) | 0.9626666 | 0.3347184 | 61 | 2.8760493 | 0.0055397 |
| GROUP1 | 0.0551478 | 0.2059764 | 61 | 0.2677384 | 0.7898039 |
| WAVE | 0.0027513 | 0.0821857 | 37 | 0.0334769 | 0.9734742 |
| BASELINE | 0.7935943 | 0.0796777 | 61 | 9.9600562 | 0.0000000 |
| GROUP1:WAVE | 0.1325256 | 0.1190896 | 37 | 1.1128227 | 0.2729625 |

**Life Satisfaction Results**

Table Confidence Intervals with imputed data – not significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | results | se | (lower | upper) | missInfo |
| **(Intercept)** | 1.973 | 0.4687 | 1.052 | 2.895 | 36 % |
| **GROUP1** | 0.5822 | 0.4631 | -0.327 | 1.491 | 27 % |
| **WAVE** | 0.03713 | 0.2064 | -0.3684 | 0.4427 | 32 % |
| **BASELINE** | 0.5714 | 0.07633 | 0.4211 | 0.7218 | 44 % |
| **GROUP1:WAVE** | -0.05275 | 0.3011 | -0.6446 | 0.5391 | 35 % |

Table with confidence intervals without imputed data - significant.

|  |  |  |  |
| --- | --- | --- | --- |
|  | lower | est. | upper |
| **(Intercept)** | 1.04 | 1.922 | 2.804 |
| **GROUP1** | 0.03061 | 0.8181 | 1.606 |
| **WAVE** | -0.2368 | 0.08727 | 0.4113 |
| **BASELINE** | 0.3943 | 0.5564 | 0.7185 |
| **GROUP1:WAVE** | -0.6169 | -0.1416 | 0.3337 |

Table with P-Value with imputed data – not significant.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Value | Std. Error | t-stat | p-value |
| **(Intercept)** | 1.965 | 0.4775 | 4.115 | 4.609e-05 |
| **GROUP1** | 0.582 | 0.505 | 1.152 | 0.2494 |
| **WAVE** | 0.03713 | 0.2288 | 0.1623 | 0.8711 |
| **BASELINE** | 0.5733 | 0.07231 | 7.928 | 1.127e-13 |
| **GROUP1:WAVE** | -0.05281 | 0.3322 | -0.159 | 0.8738 |

Table with P-Value (without imputed data) - significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Value | Std.Error | DF | t-value | p-value |
| **(Intercept)** | 1.922 | 0.4521 | 63 | 4.251 | 7.164e-05 |
| **GROUP1** | 0.8181 | 0.4037 | 63 | 2.026 | 0.04696 |
| **WAVE** | 0.08727 | 0.164 | 38 | 0.5322 | 0.5977 |
| **BASELINE** | 0.5564 | 0.0831 | 63 | 6.696 | 6.746e-09 |
| **GROUP1:WAVE** | -0.1416 | 0.2405 | 38 | -0.5885 | 0.5597 |