Vangie Stice-Israel
ACADEMIC ESL EDITING SAMPLE—HUMANITIES

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Introduction

The accident statistics of the Deutschen Hängegleiterverband (DHV) lists 215 accidents of German paragliding pilots in ~~the year~~ 2015 (Slezak, 2017). ~~The majority~~Most of ~~this~~ these accidents ~~are~~ happen~~ing~~ during launch and take off (Slezak, 2017).

~~In order t~~To ~~find out~~determine why so many accidents happen during launch and take off, it is necessary to ~~answer the question~~learn which decisions ~~do~~ paragliding pilots make in this period of ~~there~~ their flight and how ~~do the paragliding pilots come to~~they arrive at their decisions.~~?~~ Do they make purely rational decisions based on facts or intuitive decisions based on so-~~-~~called heuristics?

Heuristics are an important element of the decision-~~-~~making process. They ~~do a good job~~work in situations ~~which~~ that require fast decisions (Croskerry, 2009; Dobelli, 2011; Gigerenzer & Gaissmeier, 2011), e.g. in emergency situations. On the other hand, decisions based on heuristics can also be problematic ~~as well~~. Such decisions can be systematically biased and differ a lot from decisions ~~which were~~that are made rationally, based on facts only (Tversky & Kahneman, 1974). ~~This~~ These biased decisions can become a security risk, especially in meaningful and dangerous situations~~,~~ like launch situations of paragliding pilots.~~——~~

The ~~D~~dual-~~P~~process ~~t~~Theory of decision making specifies two ways of making decisions ~~making~~ (Evans, 1984, 1989). Type-1 ~~P~~processes are often used~~;~~, they are fast and effective. They run automatically and use associations based on relations in time and similarities (Sloman, 2002), they do not demand a ~~big~~ large cognitive effort (Kahneman & Frederick, 2002)~~,~~ and they are based on experience

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Also try to avoid colloquial language.

Commented [V2]: Please check your style guide regardng using & in in-text citations, then apply consistently throughout your paper.

Commented [V3]: This is how I find it written in the literature I find.

Commented [V4]: In English, capital letters are usually saved for the names of specific persons, places, and organizations. General terms and the names of models, theories, schools of thought, and so forth are written in lowercase.

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and usually unconscious. About 95% of our decisions are made in this intuitive t~~T~~ype-1 ~~-P~~process (De Neys, Moyens, & Vansteenwegen, 2010; Croskerry, Singhal, & Mamede, 2013a). Hence decisions made in the ~~T~~type-1 ~~-P~~process are not always optimal. It is possible that these decisions are systematically biased (Kahneman 2011, Tversky & Kahneman, 1974). In previous research, the type-1 process ~~Type-1-Process~~ of decision making– was often named heuristic decision making.

~~On the contrary~~In contrast to ~~T~~type-1- ~~P~~processes, ~~T~~type-2 -p~~P~~rocesses are reliable and safe, but they are also slow and demand~~s a lot of~~many cognitive resources (Kahneman & Frederick, 2002). Type-2 ~~-D~~decision m~~M~~aking is analytic, controlled, deductive and conscious (Kahneman & Frederick, 2002). The type-2 process is ~~Type-2-Processes~~ often called rational decision making (Kahneman 2011, Tversky & Kahneman, 1974).– Type-1- and type-2 processes ~~Type-2-Processes~~ exist side by side~~:,~~ they can run simultaneously and influence each other (Croskerry, 2009).

~~In t~~The previous literature mentions three models of pilots' decision making ~~are mentioned~~ (Wickens & Flach, 1988; Jensen, 1995; Madhavan & Lacson, 2006). All three models have in common that the ~~T~~type-2~~-P~~ process is the normal ~~case~~ mode of decision making.– Heuristics and b~~B~~iases– are presumed to be disturbing factors~~,~~ and not a– separate way of making decision-s~~making~~, as the ~~D~~dual ~~-P~~process ~~-T~~theory does.

This study uses an own model of pilot decision making (Fig. 1). It is based on

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~~assumptions by~~ Stanovich's assumptions (2011) concerning the dual process theory ~~Dual-Process-Theory~~ and on Croskerry's model (2009) with extensions stated by Croskerry, Singhal and Mamede (2013a). Croskerry (2009) and Croskerry, Singhal a~~n~~nd Mamedes model (2013a) derives from a medical context. It was developed to improve the understanding of medical doctors' decision making in ~~diagnostics of~~diagnosing diseases. This better understanding should lead to the elimination of harmful heuristics and biases in the decision-~~-~~making process. This model is quite general and can easily be adjusted to other fields of decision making, ~~as~~ including decisions of paragliding pilots.

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~~One t~~The left side of the model shows the cues for the decision-~~-~~making process ~~can be seen~~. If these cues contain~~s~~ cues for~~–~~ the intuitive, often unconscious type-1~~-~~ processing and these cues are ~~percepted~~perceived, the intuitive type-1 process ~~Type-1-Process~~ of decision making, displayed in the top of the model, is triggered.

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~~In case~~If no cues for the type-1 process ~~Type-1-Process do~~ exist or the cues are not recognised, the analytic t~~T~~ype-2 ~~P~~process, displayed in the bottom of the model, starts.~~–~~ Even if the cues for the type-1 process ~~Type-1-Process was~~were recognised, ~~it~~ they can be ignored willingly and the decision maker then switches consciously to the rational type-2 process ~~Type-2-Process~~. Following the analytic type-2 process, ~~Type-2-Process~~ the process~~–~~ continues after recognising further cues with situation assessment and risk assessment, which leads to the decision itself.

The m~~M~~odel states the possibility to change between the ~~T~~type-1~~-~~ and type-2

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process~~Type-2-Process~~ at any time and~~–~~ several times. This is displayed in the middle of the model, and it is a central assumption of the dual process theory ~~Dual-Process-Theory~~ (Stanovich, 2011). The changeover from rational decision making to intuitive decision making is called dysrational override. It is often caused by lack of time or cognitive capacity, but also tiredness, distraction or ~~missing~~ lacking motivation for rational decision making (Croskerry, 2009).

The changeover from intuitive ~~T~~type-1 decision making to rational ~~T~~type-2-decision making is called rational override~~;~~ it is caused by~~a~~ meta-cognition (Croskerry, 2009~~))~~. The dual process theory ~~Dual-Process-Theory~~ sees the intuitive and rational processes of decision making deliberately as equal, they are closely connected,~~–~~ run parallel and ~~do~~ permanently interact with each other (Croskerry, 2009).

The research describes ~~a large number of~~many heuristics and biases ~~which~~ that appear in ~~the~~ type-1 process ~~Type-1-Process of~~ decision making. Dobelli (2011) estimates their number ~~with~~ at more than 100. This study has chosen ten heuristics

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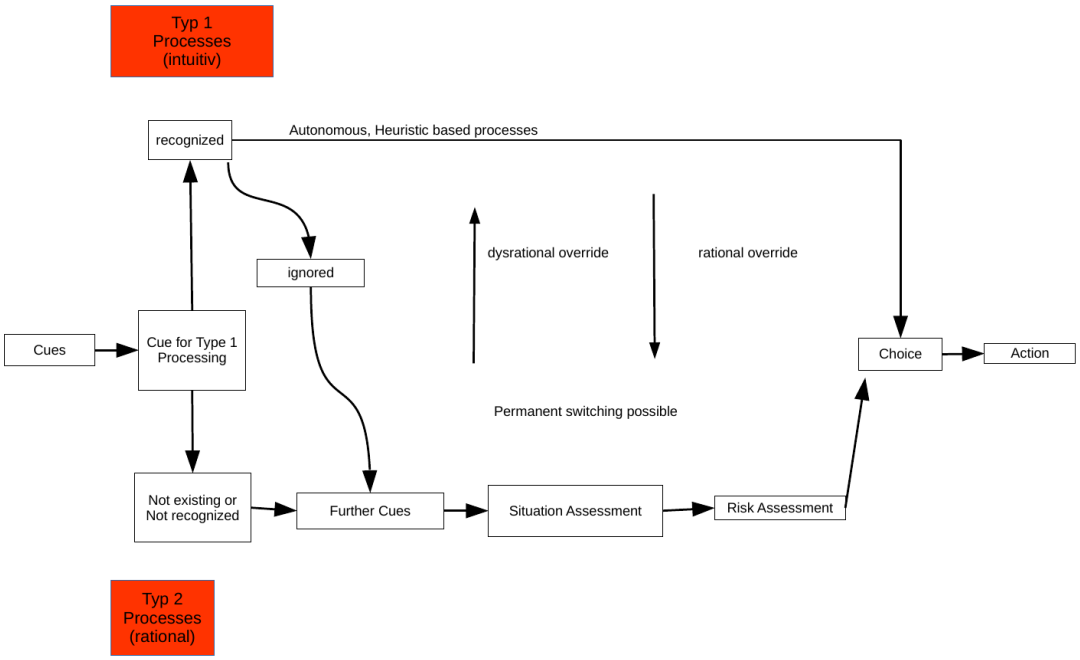
Figure



1: Model of pilots' decision making based on the ~~D~~dual-p~~P~~rocess- ~~T~~theory.

from literature~~, which~~ that ~~could~~ may be relevant for the launch decisions of paragliding pilots. ~~—~~

The ~~S~~sunk ~~C~~cost ~~F~~fallacy describes the tendency to keep former decisions in mind when making new decisions ~~are made~~ (Arkes & Blumer, 1985; Kahneman, 2011). When, ~~by~~ for example, one has made a mistaken investment ~~has been made~~, this fact will influence a new decision by ~~trying~~ attempting to keep the consequences of the mistaken investment as small as possible (Arkes & Blumer, 1985). Using a~~A~~bility b~~B~~ias, a pilot ~~is~~ may overestimate~~ing~~ his abilities in comparison with other pilots (Dobelli, 2011). Confirmation b~~B~~ias describes the tendency to interpret new

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information in a way that confirms one's beliefs and worldview. ~~Not~~ In~~c~~ompatible information is often ignored (Dobelli, 2011).~~–~~ Outcome ~~B~~bias describes the tendency to judge a decision by its former outcome, when a similar decision was made (Dobelli, 2011). However, ~~A~~a good outcome in the past does not mean that the former decision itself was good~~;~~, the good outcome may only have been good luck ~~only~~. Anchoring is based on ~~an~~ existing, quantitative information (Tversky & Kahneman, 1974; Epley~~,~~ & Gilovich, 2001). This information, called the *anchor*, may exist on pure chance, without any meaning for the decision (Ariely, 2008). ~~But~~ However, this information ~~is~~ influence~~s~~~~ing~~ the decision~~,~~ without being relevant for the decision~~;~~, it is the mere existence that matters (Tversky & Kahneman, 1974; Ariely, 2008). Framing means drawing different conclusions from the same information, depending on how that information is presented (Kahneman & Tversky, 1982; Dobelli, 2011). In ~~contrary~~ contrast to a~~A~~nchoring, qualitative information is concerned. The majority heuristic~~k~~, describes the tendency~~,~~ to ~~react~~ conform ~~under~~ to the influence of the majority (Bohner, Moskowitz, & Chaiken, 1995; Dobelli, 2011). As several experiments showed, people tend to ~~behave~~ conform, even if the majority is obviously misjudging the circumstances ~~obviously wrong~~ (e.g. Asch, 1956). ~~The~~ ~~r~~Recognition bias describes the tendency to judge objects based on ~~the fact~~ how well they are known. The better~~-~~known object is judged as more likely to occur (Dobelli, 2011; Gigerenzer, 2015). ~~The r~~Representativeness bias describes the tendency to judge objects according ~~on~~ to their similarity with prototypes. The more similar an object is to the prototype, ~~the more likely~~ the more likely the occurrence of an object is expected (Kahneman & Tversky, 1973; Dobelli, 2011). The availability heuristic

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describes the tendency to overestimate the likelihood of events with greater availability in memory, which can be influenced by how recent the memories are. It is often used when precise and ~~all~~ complete information is not available (Tversky & Kahneman, 1973; Dobelli, 2011). Information that is easily accessible ~~in mind~~ is used~~–~~ (Dobelli, 2011).

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The use of heuristics during launch could be influenced by s~~S~~ensation s~~S~~eeking and readiness to assume risk. Sensation s~~S~~eeking~~–~~ is a generalised behaviour disposition, characterised by the craving for new, complex and diverse~~ified~~ experiences ~~is characterizing sensation seeking~~.~~–~~ This is associated with the readiness to take considerable risks (Zuckerman, 2014). Castanier, Scanff ~~a~~and Woodman (2010) say that s~~S~~ensation s~~S~~eeking is ~~the cause for~~ the motivation ~~to take a lot~~for taking many and severe risks~~;~~, taking high risks can satisfy the need for stimulation. Woodman, Barlow, Bandura, Hill, Kupciw ~~a~~and MacGregor (2013) ~~were able to proof~~proved a close relationship between s~~S~~ensation s~~S~~eeking and r~~R~~isk t~~T~~aking.

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There is no research concerning decision making of paragliding pilots. In general aviation, ~~few~~ little research concerning pilots' decision making, heuristics and biases exists (Walmsley & Gilbey, 2016). The existing research is hardly applicable to paragliding pilots. ~~Nearly~~ Almost all research deals with flights leading from good weather conditions (visual meteorological conditions)~~,~~ into bad weather conditions (e.g. rain, clouds) called instrumental meteorological conditions. This

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situation does not occur for paragliding pilots because~~,~~ ~~it is essential for~~ paragliding pilots ~~to have~~must land~~ed~~ when clouds ~~or~~ get~~ting~~ close.~~–~~ Furthermore, existing research deals with decisions during the flight ~~and~~ but not with launch decisions. Hence the existing research can only provide an informative basis for possibly relevant heuristics and biases pilots use~~d by pilots~~.

This study intends to find out~~,~~ if~~–~~ paragliding pilots use ~~T~~type-1 ~~-P~~process~~es~~ ~~of~~ decision making for their launch decisions and ~~in which~~to what degree these~~s~~ type-1 processes ~~Type-1-Processes~~ have an impact on the launch decision. Further, the study investigates the influence of s~~S~~ensation ~~S~~seeking and r~~R~~isk t~~T~~aking on the launch decision ~~will be investigated~~. The study is exploratory because there is no previous research on this topic. Hence~~,~~ no exact hypotheses are established.

Preliminary Study

~~It is the aim of t~~The preliminary study aims to identify the heuristics ~~used by~~ paragliding pilots use, so that they can be analysed more closely in the main study. Further, the preliminary study ~~is used to~~ tests the scales for r~~R~~isk t~~T~~aking and s~~S~~ensation s~~S~~eeking for their suitability.

Method

Recruitment. The subjects for the preliminary study were recruited at the official paragliding launch area at Brauneck (Lenggries, Oberbayern) in July a~~u~~nd August 2017.

Participants.~~–~~ ~~34~~ Thirty-four paragliding pilots participated in the interviews. They ranged in age from 21 to 84 years (mean 43~~,~~ ~~–~~82 years; SD = 15~~,~~89)

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and their number of flights in the last year ranged between 17 and 700 (mean 100.,~~,~~76; SD = 123.,~~,~~89).~~–~~ Eight pilots were females~~;~~. 26 were males. All subjects held a German A-Licence or the Austrian Paragleiterschein.,~~,~~ hence~~–~~ they are all able to make launch decisions on their own.

Measures. The preliminary study was carried out as a structured interview (Mayring, 2010). The use of heuristics was operationalised as suggested by Bellur and Sundar (2014), using self ~~-~~report and description of scenarios. Standardised questions relating to the ~~probably relevant~~ heuristics that are most likely relevant for launch decisions were asked. An example of questions for the majority heuristic is "did it ever occur to you~~,~~ that you were thinking prior to a launch in critical weather conditions~~,~~ ~~the~~ that other pilots are launching as well?"~~"~~

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The r~~R~~isk ~~T~~taking ~~I~~inventory (RTI) (~~RTI;~~ Woodman, Barlow, Bandura, Hill, Kupciw.,~~–~~ & MacGregor, 2013) was used to collect the data concerning risk taking. The RTI contains seven items, ~~the items~~which are rated on a 5~~–~~point~~–~~ Likert-type scale (1 = never; 5 = always). The items were translated into German. Cronbach´s α for the scale in the sample is~~–~~ α = 0~~–~~.77.

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Sensation s~~S~~eeking was assessed~~–~~ with nine~~–~~ self~~-~~phrased items ~~which were~~ matched for paragliding pilots. The items were rated on a 5~~-~~point Likert-type scale (1 = never; 5 = always)~~-~~. Cronbach´s α for the scale s~~S~~*ensation* s~~S~~*eeking* in the sample of the preliminary study is α = 0~~–~~.88.

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Statistics and data analysis. The probably relevant heuristics made the categories for the quantitative analysis. The categories were ~~formed deductive~~ based on an existing– systematisation without empirical data (Kuckartz, 2012)~~.~~. The categories are a~~A~~nchoring, s~~S~~unk c~~C~~ost f~~F~~allacy, m~~M~~ajority h~~H~~euristic, f~~F~~raming, a~~A~~bility b~~B~~ias, o~~O~~utcome b~~B~~ias, r~~R~~epresentativeness h~~H~~euristic, r~~R~~ec~~k~~ognition h~~H~~euristic, a~~A~~vailability h~~H~~euristic and c~~C~~onfirmation b~~B~~ias. The data were analysed with FreeQDA (Produnis, 2011). No values were missing.

Results of the Preliminary ~~-~~Study

Fig. 1 shows how many of the participants mentioned the heuristics described in the scenarios as relevant. The three most often mentioned heuristics are displayed in black, the less often mentioned heuristics in gre~~a~~y. The majority heuristic was mentioned by 28 pilots out of 34 and is ~~hence~~ therefore the most often mentioned heuristic. Sunk c~~C~~ost f~~F~~allacy and ~~the~~ a~~A~~vailability heuristic were mentioned 21 times~~;~~ the recognition heuristic, 18 times~~;~~ the c~~C~~onfirmation b~~B~~ias, 13 times~~;~~ the o~~O~~utcome b~~B~~ias, 13 times~~;~~ the representativeness heuristic, eleven times~~;~~ the a~~A~~bility b~~B~~ias, five times~~;~~ a~~A~~nchoring and f~~F~~raming, three times. ———

The mean of the scale s~~S~~*ensation s~~S~~eeking* is 2~~,~~8 (SD = 0~~.~~77). The ~~R~~range of this scale is 3~~,~~1, with minimum 1~~,~~4 and maximum 4~~,~~5. The mean of the scale r~~R~~*isk t~~T~~aking* is 1~~,~~84 (SD = 0~~.~~71). The r~~R~~ange of the scale r~~R~~*isk t~~T~~aking* is 2~~,~~67, with minimum 1~~,~~0 and maximum 3~~,~~67. The scales r~~R~~*isk t~~T~~aking* and s~~S~~*ensation s~~S~~eeking* correlate significant positive (r = 0~~.~~50, p = 0~~.~~003) at the level p < 0~~.~~01.

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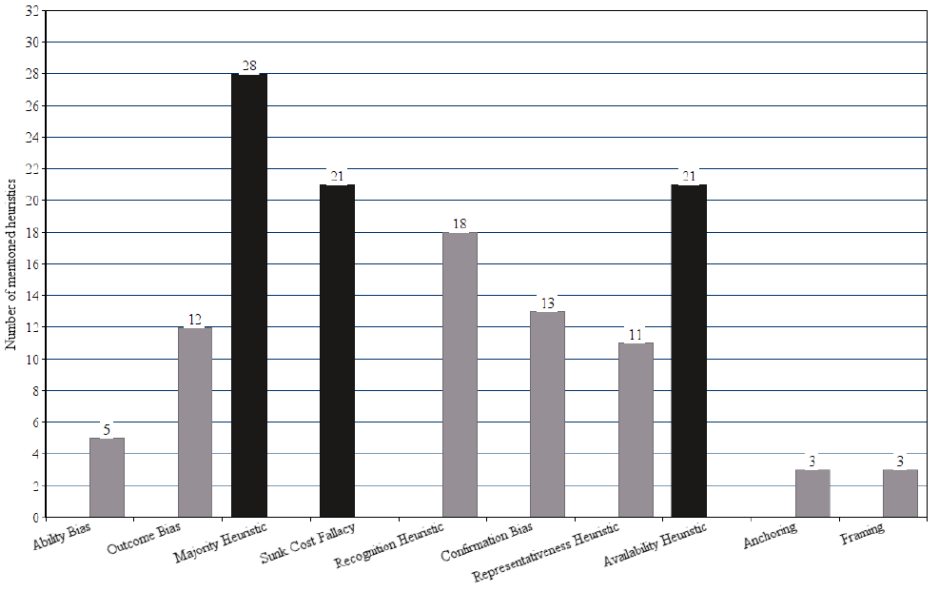
Figure



Discussion of the Preliminary Study

Paragliding pilots use all ten investigated ~~ten~~ heuristics for making ~~their~~ launch decisions. Pilots mentioned a~~A~~nchoring and ~~and F~~framing ~~were mentioned~~ only three times each ~~only~~. The reason for this could be the chosen ~~way~~ method of operationalisation~~operalisation~~. Anchoring and f~~F~~raming were developed and investigated in experimental design (Z~~z~~.B. Tversky & Kahneman, 1974; Kahneman & Tversky, 1982; Wamsley & Gilbey, 2016), which differs ~~a lot~~significantly from the ~~way~~ method of ~~operalisation~~ operationalisation used in this study. Perhaps the design of this study is not appropriate ~~to~~ for investigating anchoring and framing. This should be investigated in a future study. Because of the results, m~~M~~ajority heuristic, sunk cost fallacy and a~~A~~vailability heuristic will be investigated more

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Commented [V34]: Do you mean *operationalisation*?

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Commented [V36]: Do you mean anchoring and framing should be investigated in a future study, or do you mean a future study should investigate whether it was appropriate to include them in this study?

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closely in the main study.