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**Developing Young Adolescents' Psychological Need Satisfaction: A
Feasibility Study of a Pupil-Focused Intervention in Secondary Schools**

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Abstract

Education-based interventions traditionally focus on the teacher to better support pupils' motivation. Grounded in self-determination theory, the study investigates the feasibility of a pupil-focused intervention to help pupils become more active in their search for basic psychological need satisfaction (BPNS). Focus groups and a two week pupil completed diary-log were administered with 22 UK secondary school pupils from Years 7 and 8 (aged 11-13 years; 45% male, 55% female) and 12 teachers (42% male, 58% female). Despite perceived value from teachers, a written diary-log appeared to be ineffective in engaging pupils. Pupil-focused initiatives may benefit from support sessions to provide guidance on pupils' reflections, should be incorporated into normal school practices with a showcase event, and be designed in an interactive electronic format. The study offers theoretical considerations regarding pupils' intrapsychic experience of motivation, and provides teacher and pupil insights into the practicalities of conducting pupil-focused interventions based upon BPNS.

Keywords: motivation, psychological needs, diary-log, self-reflection, early adolescence.

Introduction

1
2 A significant aim for educators is to motivate pupils to learn. This can sometimes
3 prove challenging with some pupils seemingly withdrawn from learning activities or only
4 exerting minimal effort at school (Legault Green-Demers, & Pelletier, 2006). Optimal
5 motivation is posited to flourish when pupils have adaptive intrapersonal experiences within a
6 supportive environment. Educational interventions largely focus on nurturing the latter via
7 teacher training programmes (e.g. Aelterman, Vansteenkiste, Van den Berghe, De Mayer, &
8 Haerens, 2014), school-based initiatives (e.g. Shannon et al., 2018), or amendments to school
9 policy (see Lawson & Lawson, 2013). Yet empowering pupil-centred programmes may also
10 be beneficial in nurturing their autonomous motivation for learning by targeting pupils'
11 understanding and awareness of their psychological experiences (e.g., Cleary & Zimmerman,
12 2004). Consequently, the present study explores the feasibility of a pupil-centred intervention
13 in early secondary schools based upon pupils' experience of basic psychological need
14 satisfaction (Ryan, & Deci 2017).

15 Self-determination theory (SDT) is a theory of human motivation which maintains
16 that individuals' optimal psychological growth and self-determined motivation is dependent
17 on the satisfaction of three basic psychological needs for autonomy, competence, and
18 relatedness (Ryan & Deci, 2017). Autonomy reflects an individual's experience of volition
19 and psychological freedom so that their behaviour is perceived to originate from themselves
20 (deCharms, 1968). The need for competence reflects an individual's experience of mastery
21 within their environment and perceived effectance in achieving their desired goals (White,
22 1959). Relatedness reflects the experience of close connection and acceptance from others;
23 that is, to care and be cared for by others (Baumeister & Leary, 1995). The fulfilment of these
24 needs has been shown to represent the psychological foundation for autonomous motivation,
25 school engagement, better emotional functioning, well-being, and school achievement (e.g.,

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26 Badri, Amani-Saribaglou, Ahrari, Jahadi, & Mahmoudi, 2014; Ratelle & Duchesne, 2014;
27 Saeki & Quirk, 2015). In contrast, frustration of these needs can result in amotivation, school
28 disengagement and ill-being (e.g., Earl, Taylor, Meijen, & Passfield, 2017; Jang, Kim, &
29 Reeve, 2016).

30 Founded on this premise, SDT based interventions have focused on creating social
31 environments that foster learners' psychological need satisfaction. For example, training
32 secondary school teachers to become more autonomy supportive has been found to result in
33 learners reporting positive motivational and academic outcomes (e.g. Reeve, Jang, Carrell,
34 Jeon, & Barch, 2004; Tessier, Sarrazin & Ntoumanis, 2010). More recent school-based
35 interventions have been centred upon educating and changing teachers' beliefs towards
36 autonomy supportive strategies (Cheon & Reeve, 2015), or the combination of autonomy and
37 competence support (e.g., Aelterman et al., 2014). Providing teachers with information on the
38 benefits of need support as well as offering training workshops and group discussions were
39 found to enhance teachers' use of need supportive strategies. In turn, this resulted in pupils
40 reporting improved psychological need satisfaction, autonomous learning, better school
41 grades, higher school engagement, and lower amotivation. Furthermore, teachers were found
42 to be able to maintain the use of these strategies across the subsequent school year (Cheon &
43 Reeve, 2013).

44 Despite the clear value of these contextual interventions, psychological need
45 satisfaction is an intrapsychic experience and thus unique to each individual (Deci, Ryan, &
46 Williams, 1996). It is not the social context per se that results in the fulfilment of the
47 psychological needs but rather the relative and subjective meaning pupils place upon the
48 context (i.e. the functional significance; Ryan & Deci, 2017). Some pupils may become
49 predisposed to subconsciously facilitate or block their psychological experiences. For
50 instance, some pupils will enter school with tendencies to seek out possibilities for choice,

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51 interest and information at school that is conducive to need satisfaction. Alternatively, other
52 pupils may adopt a deleterious perspective which predisposes them to experience a lack of
53 need satisfaction as they are inclined to perceive elements of school as pressuring, coercive,
54 or uncontrollable. For pupils who adopt this maladaptive outlook, modifications to a school
55 climate, even if motivationally supportive, may be limited in the extent to which they foster
56 psychological need satisfaction. Raising pupils' self-awareness of opportunities for
57 psychological need satisfaction, so as to increase the likelihood they are inclined towards
58 such occasions, may be an important method of enhancing their school experience regardless
59 of any variation in teachers or learning contexts.

60 There may be potential caveats relating to entirely context-focused interventions.
61 First, they place sole reliance on the teaching behaviour to develop pupils' motivational
62 orientation and cognitions. Need supportive teaching can be a challenge for many educators
63 to grasp and can be negatively influenced by time pressures, large class sizes, and diverse
64 curriculums (Liu, Wang, Reeve, Kee, & Chian, 2019; Pelletier, Séguin-Lévesque, & Legault,
65 2002; Taylor, Ntoumanis, & Smith, 2009). To illustrate, previous research found teachers
66 were less familiar with strategies of autonomy support compared to competence support
67 (Aelterman et al., 2013). Additional teacher training initiatives may be required to develop
68 teachers' conscious awareness and consistent use of effective need supportive teaching (e.g.,
69 Reeve & Cheon, 2016). Second, teachers' perceptions of the need support they provide can
70 be out of sync with those of the pupils (e.g. Zeedyk et al., 2003). Correlations between
71 teacher and student perceptions of need support have been found to be small in magnitude
72 (Taylor & Ntoumanis, 2007), or only congruent regarding the support of autonomy but not
73 competence (Aelterman et al., 2014). Consequently, manipulating the learning context may
74 be ineffective if pupils perceive the context in a different way to that which is intended.

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75 To supplement the existing contextual interventions, there may be scope to devise an
76 intervention that directly targets pupils' own perceptions and awareness of their
77 psychological needs. Targeting pupil cognitions and experiences, rather than solely academic
78 performance, can represent a powerful tool to change learning behaviour but can often be
79 overlooked within education systems (Yeager & Walton, 2011). In accord, a growing number
80 of psychological interventions have been implemented in education facilitating pupils'
81 growth mind-sets (e.g., Park, Gunderson, Tsukayama, Levine, & Beilock, 2016), self-control
82 (Duckworth, White, Matteucci, Shearer, & Gross, 2016), and attributions (Hudley, Graham,
83 & Taylor, 2007). To the authors' knowledge, no pupil-focused intervention has been explored
84 based upon basic psychological needs, despite the clear benefits for pupils' psychological and
85 academic development. Thus how to implement such an intervention would be worth
86 investigating.

87 *The present research*

88 The principal aim of the present research was to test the feasibility of conducting a
89 pupil-focused intervention with young adolescents (11-13 years), based upon psychological
90 need satisfaction. In designing any learning-based initiative, a common problem is getting
91 learners to participate and engage in them (e.g. Grant, Kinnersley, Metcalf, Pill, & Houston,
92 2006). Regardless of a theoretical rationale, if the intervention is not practically feasible, or
93 does not have any relevance for the pupils involved, it will be ineffective in imparting the
94 intended psychological awareness (Lyst, Gabriel, O'Shaughnessy, Meyers, & Meyers, 2005).

95 A pupil diary-log is proposed to provide a method of implementing such an
96 intervention. Diaries are not uncommon in schools, often being used to help pupils record
97 progress with their homework (e.g., Zabrorowski & Breidenstein, 2011), and may help
98 influence pupils' attitudes and values by initiating internal dialogue that is personally relevant
99 (Walshe, 2013). Diary methodologies have been widely implemented within university

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100 education to promote students' reflective learning (e.g. Pavlovich, 2007). Akin with self-
101 regulated learning theory (Zimmerman, 2008), the process of self-reflection helps develop a
102 deeper level of learning so pupils have a greater insight into their thought processes and are
103 better placed to adaptively regulate their own learning, self-evaluations and emotions
104 (Ghanizadeh, 2017). Moreover, the process of self-regulation is cyclic whereby self-
105 reflection helps inform learners' approach to learning through enhanced motivational beliefs
106 and goal-setting (i.e. forethought phase) which in turn facilitates better meta-cognition and
107 task performance (i.e. performance phase; see Cleary & Zimmerman, 2004). Reflective diary-
108 logs have been shown to be useful in developing both learning strategies and cognitive
109 processing of information in young adolescents (e.g. Glogger, Schwonke, Holzäpfel,
110 Nückles, & Renkl, 2012). The development of positive thought patterns and intentional self-
111 regulation during adolescence has also been associated with higher well-being, positive
112 development and self-identity (Schmid, Phelps, & Lerner, 2011). The recording of repeated
113 experiences of need satisfaction may help foster more implicit and non-conscious cognitions
114 that are facilitative of autonomous motivation and psychological need fulfilment (Levesque,
115 Copeland, & Sutcliffe, 2008).

116 The current study had two key areas of investigation. Firstly, it was sought to identify
117 any practical considerations that may facilitate or hinder pupils' engagement with a diary-log.
118 Both pupil and teacher opinions were obtained to acquire if, and how, a diary-log may be
119 enjoyable, interesting, and practical for pupils to complete. Although pupil perceptions of the
120 intervention are fundamental to its potential effectiveness, teachers must also see a benefit for
121 it to be incorporated into school programmes. The second intention was to explore the
122 general utility of a reflective diary-log with young adolescent pupils. Although self-reflection
123 is emphasised in higher education with adult learners, cognitive and self-regulatory abilities
124 are still maturing during early adolescence (Huizinga, Dolan, & van der Molen, 2006). It may

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125 be valuable to nurture psychological awareness during this initial developmental stage as
126 cognitive and motivational regulation have been shown to decline across adolescence and
127 negatively impact school performance (Bakracevic Vukman & Licardo, 2010). The findings
128 of the present research are intended to inform future implementation of a proposed
129 intervention which could then be used to test if it is effective in enhancing pupils'
130 psychological need satisfaction, and academic performance, at school.

131 **Materials and Method**

132 *Participants*

133 Participants were 22 pupils from Years 7 and 8 (mean age = 12.36 years, $SD = 0.73$
134 years; Year 7 = 10, Year 8 = 12; male = 10, female = 12) and their teachers ($n = 12$; 5 male, 7
135 female) from two secondary schools in the UK. Fifty-nine percent of pupils were White
136 English, 18% were Black African, 9% were Indian, and 14% reported other mixed ethnicities.
137 Four pupils were classified as having a special educational need (SEN), which included one
138 pupil with autism, two pupils with a mild-severe learning difficulty and one pupil with a
139 physical disability. Both schools were co-educational institutions, and included pupils
140 ranging from 11 to 18 years of age.

141 *Recruitment*

142 Prior to the study commencing, ethical approval from the principal researcher's
143 university ethics committee was obtained. A purposive sampling strategy was used to recruit
144 a selective and non-selective school, and recruit pupils from different ability sets across both
145 Year 7 and 8 pupils. Consequently, we aimed to illuminate both similar and unique
146 characteristics between the different school institutions and their respective pupils (Patton,
147 2002). We adopted an opportunistic sampling approach to recruit teachers by selecting
148 teachers that taught and had direct interaction with the participating pupils. Informed parental
149 consent was received for all participating pupils, and signed informed consent received from

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150 both teachers and pupils. All teachers, pupils, and pupils' parents were informed that
151 discussions would be audio recorded, treated in strict confidence and anonymity would be
152 protected in the dissemination of any findings.

153 *Procedure*

154 Based on methods from previous school-based feasibility studies (e.g. Mendelson,
155 Greenberg, Dariotis, Gould, Rhoades, & Leaf, 2010), a series of preliminary pupil and
156 teacher focus groups were conducted to investigate their initial opinions towards the utility
157 and feasibility of the proposed diary-log. An advantage of focus groups is that they help
158 generate common attitudes, beliefs and experiences that are relevant and applicable within a
159 specific social context (i.e. within schools; Carey & Asbury, 2016; Stewart & Shamdasani,
160 2014). Through enabling group interaction, it was hoped the serial discussions would
161 formulate a greater breadth and depth of information that would inform the utility, and any
162 limitations, of any potential intervention (Cohen, Manion, & Morrison, 2013). Hence, a
163 perspective of induction was predominately adopted within each group discussion to attempt
164 to identify unforeseen ideas about the effectiveness of the intervention and how it could be
165 implemented within schools in a novel way (Morse & Mitcham, 2002). These insights could
166 then be collated to help guide the development of a possible intervention that could piloted
167 with the pupils.

168 Following practical guidelines on the number and size of focus groups (Krueger &
169 Casey, 2014), six preliminary focus groups were planned (i.e. two teacher and four pupil),
170 after which it would be assessed if a critical mass of data had been obtained. All focus groups
171 comprised of six participants, with the exception of one pupil group which included four
172 pupils, and were led by the principal researcher. In line with the schools' policies, a member
173 of teaching staff was present during pupil discussions, either in an adjacent room or in the
174 background of the specified classroom. A semi-structured interview schedule was developed

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175 to provide a generic but flexible framework for each group discussion which offered open-
176 ended questions so teachers and pupils could elaborate on their experiences and opinions.
177 Pupils with SENs were able to have their personal assistant present in the focus groups to
178 help with translation or understanding of any question, and all questions were asked in a
179 child-friendly manner. Each focus group was structured into three distinct sections; (1)
180 discuss the potential value of the diary-logs; (2) identify any potential barriers to conducting
181 the intervention; (3) gain practical suggestions that may need to be implemented. On average,
182 pupil discussions lasted approximately 45 minutes and teacher discussions lasted
183 approximately one hour.

184 Following these preliminary focus groups, the next phase was to pilot a version of the
185 diary-log with pupils. Suggestions from the preliminary focus groups were included in the
186 trialled version of the diary-log but some, such as creating an electronic application, were
187 unfeasible given the limited timescale. Consequently, a written paper version of the diary-log
188 was trialled with pupils for two weeks. Pupils were briefed on the aim of the diary-log and
189 how to complete them. To ensure pupils of all reading levels could complete the diary,
190 written instructions regarding how to complete the diary were provided at the beginning of
191 each diary-log, as well as explained verbally and demonstrated in person prior to pupils
192 trialling the diary-log. Pupils were able to record activities for each day of the two-week
193 period. It was explained to pupils they could complete the diary-log for as many days as they
194 wished (an example of these pupil instructions and diary-log are available in online
195 supplementary information). Diaries were presented in a coloured folder, which could be
196 personalised however pupils wished. Teachers were instructed that they could promote, or not
197 promote, the dairies in any way they desired. The research investigators had no contact with
198 pupils during this two-week pilot.

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199 The diary-log for each day was structured into two sections; one relating to
200 competence satisfaction whereby pupils reported activities they felt they did well, and the
201 other relating to relatedness satisfaction whereby pupils reported activities where they felt
202 connected with others. For both sections, subsequent boxes were provided for pupils to
203 record their feelings during each activity and the reasons they perceived this to be the case.
204 Given the concept of autonomy is complex and multifaceted (e.g. see Katz & Assor, 2007;
205 Reeve, Nix, & Hamm, 2003), rather than pupils trying to record activities where they
206 experienced autonomy, the intervention attempted to foster pupils' autonomy satisfaction by
207 providing them freedom to record experiences that were personally relevant and meaningful
208 to them, and in a manner of their preference (e.g., written notes, drawings, or photos). To
209 avoid pupils feeling coerced, it was stressed to pupils that the diaries would not be assessed
210 and they were free to use the diary-log as much as they desired, without repercussions if they
211 did not complete it. Furthermore, psychological need satisfaction can be influenced by a
212 multitude of contexts (Milyavskaya & Koestner, 2011), thus pupils were free to log any
213 activity they wished (e.g. school, extra-curricular, and leisure time activities). The premise
214 was for pupils to only record positive experiences of psychological need satisfaction, rather
215 than more deleterious experiences of need frustration. Pupils were instructed that the diaries
216 would be collected at the end of the two weeks, the content would be reviewed by the
217 principal researcher and that it would not be seen by the school or their teachers.

218 The final phase involved conducting follow-up focus groups to acquire pupil and
219 teacher feedback on the diary-logs. These focus groups followed the same procedure as the
220 first set of focus groups, with the exception that pupils were asked to complete a short
221 questionnaire at the beginning of these follow-up discussions. These questionnaires provided
222 quantitative data on pupils' perceived difficulty and enjoyment of the diary-log, the time of
223 day they completed the diary-log, the type of activities they recorded, and any future

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224 preferences. As many teachers were not involved in the two-week pilot of the intervention,
225 teacher follow-up discussions were typically smaller in size and shorter in duration (between
226 20 – 40 minutes). These follow-up discussions were designed to find out how pupils
227 generally found the diary-logs, any issues they experienced, and any modifications that would
228 make the diaries easier to complete, more appealing, and more practical. Teachers were also
229 asked if, and how, they may promote the diary-log within schools.

230 *Data Analysis*

231 In the first instance, the principal researcher listened to and transcribed the
232 discussions from each focus group to identify common themes from the data. Subsequently,
233 these transcriptions were examined by additional members of the research team to confirm
234 agreement over these common themes (Campbell, Quincy, Osserman, & Pedersen, 2013).
235 These themes were also explained and discussed with teachers and pupils at the end of the
236 follow-up focus groups to ensure their opinions had been comprehensively captured in the
237 study findings (Birt, Scott, Cavers, Campbell, & Walter, 2016). Such a thematic analytical
238 approach is particularly suited to the present study given the aim of exploring the feasibility
239 of our intervention, rather than examining complex theoretical questions that require higher
240 degrees of interpretation (Krueger & Casey, 2014; Vaismoradi, Turunen, & Bondas, 2013).
241 After the two week pilot, the principal researcher collected the diary-logs and examined them
242 in regards to the number of days that contained content and the quality of this content. The
243 quality of the diary-log content was rated in relation to the extent that pupils provided a
244 detailed description of each respective activity, indicated specific feelings, and considered the
245 perceived reasons for these feelings. A diary-log entry was rated poor in quality if there was
246 minimal description of the activity or feelings, with no reflection on the reasons for these
247 feelings.

248 **Results**

249 *Perceived Utility of the Diary-log*

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250 Preliminary discussions suggested that enhancing pupils' own awareness of their
251 psychological needs was relatively novel for teachers and pupils, Initially, both emphasised
252 contextual factors as central for pupils' experiences at school (e.g. teacher feedback, role
253 models, social comparisons, or ridicule from others). Yet, after being introduced to the pupil-
254 focused intervention, teachers conveyed value in pupils becoming more self-reliant in their
255 search for positive psychological experiences when faced with contextual dynamics. One
256 teacher said "It is a good idea to get them to think as their own individual", while another
257 explained "to build these skills (pupils' awareness of their psychological needs) they are
258 going to come from so many different places....if pupils can highlight the areas, and be aware
259 of the areas, at least if they want to, they can do or try to do something about it". Some pupils
260 suggested they "often forget a lot of the good things they do" and the diary-log may help
261 them "focus on the positives" and reflect more each day as they do not usually get the
262 opportunity.

263 *Pupil Completion of the Diary-log*

264 Overall, 82% of pupils returned their diary-logs at the end of the study with the pupils
265 ($n = 4$) who did not return their diary-logs coming from the same school. Of the returned
266 diaries, 61% included content for 11-14 days, whereas 22% had no days completed or
267 attempted. Figure 1 depicts the rating of pupil diary-logs in regards to the quality of written
268 content and reflection. An example of good quality was "I found out I got a good mark in one
269 of my maths papers. I felt happy and proud – as I did better than my last two results" (i.e.
270 competence satisfaction) and "In class I helped my partner with their classwork. I felt pleased
271 and supportive – they didn't know how do the work and it was nice to help them" (i.e.
272 relatedness satisfaction). Such diary entries attempt to give detail about positive aspects of an
273 activity, outline specific feelings, and provide particular reflection on why the activity may
274 associate with the corresponding feelings. An example of poorer quality was "Cricket. Felt

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275 OK, it was fun” and “English, Felt OK”. These entries offer a generic statement of an activity
276 with scarce, or no, reflection of their experiences and the corresponding link with aspects of
277 the activity. Examination of the returned diaries found that the type of activities that pupils
278 recorded varied between school tests and group work (55%), sport (41%), after-school clubs
279 (14%), and family and friends (9%).

280 A concern for teachers was that pupils may struggle to reflect on their psychological
281 experiences and subsequent feelings. One teacher explained that pupils “probably reflect
282 naturally, but when it comes to using that next time to change this or that, I think that is the
283 bit that is missing”. Another teacher expressed “they (the pupils) have a quite narrow
284 definition of things...reflect may just mean remember”. A pupil mirrored this view
285 explaining the diary-log only made them aware of their experiences when completing it but
286 not in-between diary-log entries. Some pupils expressed a desire to record negative
287 experiences because they were more likely to fabricate positive activities, or not complete the
288 diary-log at all, in the event that they had a bad experience. One pupil commented “if I had a
289 bad day, I would look at the diary and not write anything”, whereas another said “on a bad
290 day, I just wouldn’t write anything and may make things up”. A teacher indicated pupils may
291 not actually be reflecting, expressing “the misleading thing is they are conscientious, they
292 may have filled it in, but made stuff up”.

INSERT FIGURE 1 HERE

294 In addition, pupil discussions conveyed that the large written boxes for writing were
295 confusing, boring, and appeared too much work, with 14% of pupils reporting they found the
296 written diary-log hard to complete. The specification of two school lessons and a leisure
297 activity was found to be restrictive as pupils had numerous activities outside of school they
298 wanted to write about (e.g. sport, music, or time with friends). Furthermore, 73% of pupils
299 reported they would prefer an electronic mobile app version of the diary-log. This was the

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300 case for every pupil in the school that regularly incorporated electronic learning devices into
301 school activities. Particularly prevalent for younger pupils (i.e. 11-12 year olds) was a lack of
302 enjoyment of the written version ($n = 82\%$) and a preference for an electronic app ($n =$
303 100%).

304 The extent pupils reported they remembered to complete the diary-log is illustrated in
305 Figure 2. The majority of pupils expressed the diary-log “was difficult to remember” and
306 14% reported they never remembered. One pupil said the diary-log “wasn’t too much work,
307 the work was remembering”. A number of pupils explained they would complete numerous
308 diary-log entries retrospectively if they had forgotten to complete the diary-log. Figure 3
309 portrays when pupils completed the diary-log with 96% reporting they did so after school or
310 in the evening when they remembered or had spare time. A concern from teachers was that
311 pupils would not perceive any salient benefit, voicing the diary-log would need to seem
312 relevant to pupils and allow them to see a degree of progression or improvement through
313 their use. This seemed evident after the trial as pupils expressed they struggled to complete
314 the diary-log independent of any other incentive (e.g., school achievement points which could
315 be exchanged for monetary awards). One pupil commented “I know it has meaning to you
316 (the researcher) but to us it is just a diary” whereas another indicated they “didn’t think there
317 was a point”.

318 **INSERT FIGURE 2 & FIGURE 3 HERE**

319 **Discussion and Future Considerations**

320 The proposal of a pupil-focused intervention is aimed to help pupils begin to develop
321 an awareness of their own psychological need satisfaction as opposed to simply reacting to
322 environmental influences, such as teaching strategies or the classroom climate. The initial
323 focus group discussions and two week trial of the diary-log indicated that, although teachers
324 and pupils may see potential substantive value in the intervention, a written diary-log may not

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325 be a practically feasible method of engaging pupils to become more reflective of their
326 psychological need satisfaction. The fact that 40% of pupils either did not return or complete
327 the diary-log suggests that a number of pupils may have struggled, not enjoyed, or
328 disengaged with the diary-log. Consequently, the findings highlight a number of practical
329 difficulties in using the format of a written diary-log to encourage pupils to become more
330 active in their search for psychological need satisfaction. In addressing these substantive
331 concerns, both teachers and pupils offered a variety of insights into how the future design of a
332 pupil-focused intervention may be modified for implementation in secondary schools. These
333 insights are outlined and discussed in the subsequent sections.

334 *Facilitating Pupils' Self-Reflection*

335 In accord with initial teacher concerns, the finding that over half of the pupil diary-
336 logs were rated as less than adequate in both the written content ($n = 63\%$) and quality of
337 reflection ($n = 68\%$) is particularly telling (see Figure 1). These diaries provided sparse detail
338 of the outlined activities, and limited acknowledgement of the connection between any
339 feelings and the respective activity. In addition to pupils' academic progression, school
340 policies aim to promote pupils' personal development towards lifelong and self-regulated
341 learning (Department of Education, 2019). The present findings suggest that relying on the
342 pupils alone to understand the link between their activities and feelings may be unrealistic.
343 Indeed, early adolescence represents a period of development in which essential self-
344 regulatory functions are still maturing, such as cognitive skills (e.g. self-questioning or goal
345 setting) and sense of self (e.g. interests and values; Azevedo, Moos, Johnson, & Chauncey,
346 2010; Huizinga et al., 2006).

347 Teachers and pupils conveyed the need for intermittent sessions to help guide pupils'
348 reflection on their experiences of psychological need satisfaction. Such assistance towards
349 self-reflection may help foster a cyclic process to enhance pupils' motivational beliefs, goal-

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350 setting and, in turn, improve meta-cognitive processes (see Zimmerman, 2008). These
351 sessions may also provide pupils with the opportunity and guidance to develop expressive
352 writing skills about their experiences which can further benefit emotional and cognitive
353 functioning (Travagin, Margola, & Revenson, 2015). Intermittent guidance may also be
354 essential in helping pupils focus on occasions of psychological need satisfaction even when
355 this may be challenging. Reflecting on negative experiences can be less beneficial during
356 early adolescence (McLean, Breen, & Fournier, 2010), and there may be scope to help pupils
357 reflect on any negative experiences in a more constructive manner. The important objective
358 being that pupils understand their self-perceptions, informed by a greater self-awareness,
359 influence their feelings and behaviours more so than their actual ability.

360 A pupil-focused initiative is not proposed as an alternative to existing contextual
361 interventions (e.g. Cheon & Reeve, 2015; Reeve et al., 2004), but needs to be used in
362 conjunction with them. Any guidance provided to pupils would need to be provided in an
363 autonomy supportive manner (e.g. Reeve & Jang, 2006), that offers pupils' structured
364 information (e.g., Hospel & Galand, 2016) and emotional support (e.g. Ruzek et al., 2016).
365 Both teachers and pupils expressed this guidance would be more engaging for pupils if
366 conducted in informal contexts that were distinct from school classes and may act as a source
367 of feedback and incentive. In particular, pupils expressed that having their effort towards an
368 intervention acknowledged and praised by teachers would be motivating for them. Pupils also
369 indicated that having allocated time at school, and receiving feedback, may help them engage
370 with the intervention as they had expressed that they typically completed the diary-log at
371 home, in the evening, as they were not provided time during school.

372 *Integration with Technology*

373 In regards to a diary-log, future implementation may be most effective in engaging
374 pupils if presented in an electronic app format. Pupils explained that an electronic app (e.g.

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375 mobile phone, tablet, or web application) would be more entertaining, accessible, and
376 personable. Teachers also agreed that an electronic format of the diary-log would be
377 appealing to pupils and ‘on to a win’. Pupils expressed that recording activities in a variety of
378 methods (i.e. video, pictures, audio, written, and emoji’s [animated ideograms]) would help
379 them express how they felt more accurately, and also still allow handwritten diary-log entries
380 to be uploaded onto an electronic database. Moreover, teachers explained the use of an
381 electronic app would reduce the perception of vague boxes of writing and prescribed
382 situations by enabling them to choose options from a drop-down list. There could also be a
383 “free-option” to encourage pupils to think of their own examples.

384 Given that only a minority of pupils ($n = 22\%$) often remembered to complete the
385 diary-log on a regular basis, it seems unlikely that pupils will get into a habit of using a diary-
386 log if they are not provided with reminders; particularly given the multiple classes and
387 academic requirements they are required to juggle. Pupils explained an advantage of an
388 electronic app is that regular notifications, such as popups and alerts, can appear on their
389 smart device to prompt them to complete their diary-log entry. However, they stated they
390 would want to set their own individual reminders as the diary-log may become annoying, or
391 ignored, if they received notifications at times when they could not complete the diary-log.
392 The trialled written version may have had connotations with school homework, and thus been
393 unappealing for pupils (see Barker & Weller, 2003); whereas, teachers believed an electronic
394 database of experiences would be easier for pupils to reflect on. Hence, it seems essential any
395 intervention appears like an interactive and non-schoolwork related activity to pupils.

396 An array of literature has emerged of the possible benefits that interactive apps can
397 have for learning (Martin & Ertzberger, 2013), metacognition (Ward & Sweeney, 2015), self-
398 regulation (Johnson & Davies, 2014) and homework activity (Rawson, Stahovich & Mayer,
399 2017). Computers and mobile phone devices offer new possibilities for pupil-focused

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400 learning, enabling teachers more time to focus on enhancing children’s thinking rather than
401 solely their understanding of learning material (Stevenson, Hedberg, Highfield, & Diao,
402 2015). Modern schools often utilise existing web-applications such as *Edmodo.com* (which
403 enables interaction between teachers, parents and pupils; see Holland & Muilenburg, 2011),
404 and *ShowMe.com* (allowing teachers to share learning videos with pupils; see Spencer,
405 Coutts, Fagan, & King, 2013). In accord with data protection regulations, care would be
406 needed to ensure the confidentiality of pupils’ entries should they desire it, and that
407 information is held securely from public access (Henshaw, 2017).

408 Disparity also emerged between pupils to the extent they would keep their diary-log
409 personal or share with other pupils, with some indicating they may feel less talented if they
410 compared their diary-log with others. To minimise pupils becoming overly focused on
411 external motives (Ryan & Deci, 2017), or performance avoidance goals (Elliot & McGregor,
412 2001), a fundamental aspect of a pupil-focused intervention would be to emphasis pupils’
413 own self-referenced psychological need satisfaction, rather than making comparisons with
414 other pupils.

415 ***Integration with School Practises***

416 It also seems impractical to expect a standalone diary-log to provide a meaningful
417 reason for pupils to autonomously engage with the proposed intervention. Pupil engagement
418 may be better facilitated when the initiatives are fused with traditional school practices (see
419 Miltenberger, 2011). Teachers suggested the diary-log could be incorporated into a wider
420 initiative (e.g., culminating in a “showcase event” or “presentation” day) to offer pupils a
421 salient reason to persist with the diary-log, and explained that pupils like being provided with
422 responsibility. Indeed, perceiving personal relevance is a fundamental dimension of
423 experiencing autonomy satisfaction (Katz & Assor, 2007). Incorporating a showcase event
424 within the school curriculum may help pupils take credit for their improvements, as opposed

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425 to feeling stigmatised as “being in need” or being overtly aware of the intended outcomes
426 (Yeager & Walton, 2011), as well as providing a specific timeframe for the intervention
427 rather than it seeming endless. Other extrinsic motives were suggested by pupils, such as
428 specific prizes and merit marks that could be collected to get school awards, but there may be
429 a risk these external contingents could compromise pupils’ psychological need satisfaction if
430 their motives became exclusively regulated by such external contingencies (see
431 internalisation process; Deci & Ryan, 2000).

432 *Limitations and Future Research*

433 As both teacher and pupil opinions were obtained, they became co-collaborators in
434 developing the intervention as opposed to an initiative being imposed on schools without
435 their input. A limitation of the study, however, is that the sample size was relatively small
436 and limited to two schools. Secondary schools typically comprise large pupil cohorts and it
437 will present a more formidable task to administer the intervention on a larger scale. Future
438 replications of the study may include more schools but focus on a single year group to test the
439 feasibility across a multitude of school institutions. Secondly, despite conscious efforts to
440 recruit a heterogeneous pupil sample, the recruitment method relied on willing teachers
441 consenting to take part, and allowing access to pupils within their classes. Consequently, the
442 present sample may be biased towards teachers that are typically more proactive in piloting
443 new initiatives and pupils that are generally more engaged at school. Nevertheless, although
444 the findings cannot be generalised to pupils that did not volunteer or receive parental consent,
445 the attained responses are useful for informing the applicability of an intervention in schools.
446 Finally, it is acknowledged that the next phase will be to determine the effectiveness of an
447 intervention, such as an electronic version of the diary-log. Using random control group
448 methodologies (e.g. Sherman et al., 2013), future research could test if the proposed

449 intervention may help increase pupils' experience of psychological need satisfaction and
450 explore any impact this may have on their well-being and academic performance.

451 **Conclusions**

452 The present work provides insights into the feasibility of conducting new pupil-
453 focused SDT interventions that could be used to complement existing contextual
454 interventions (e.g., Cheon & Reeve, 2015). The development of learners' psychological
455 processes has been suggested to have substantial value in facilitating academic progression
456 (Yeager & Walton, 2011). The present intervention would be aimed at helping pupils become
457 more self-reliant and strive to focus on positive experiences of psychological need
458 satisfaction. Although teachers and pupils could see value in helping pupils become more
459 active in striving for psychological need satisfaction, a written diary-log would appear an
460 unfeasible and ineffective method of engaging pupils in an intervention. Future
461 implementation of a pupil-focused intervention may be more effective by including methods
462 of guiding pupils in their reflection process, being incorporated into normal school practices,
463 and being distinct from routine school work through the use of interactive electronic
464 applications. The present study provides a practical foundation for the development of future
465 SDT interventions and analytical research to examine the validity and effectiveness of pupil-
466 focused initiatives in enhancing pupils' psychological need satisfaction.

467 **Declaration of Interests**

468 No potential conflict of interest was reported by the authors.

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Figure 1

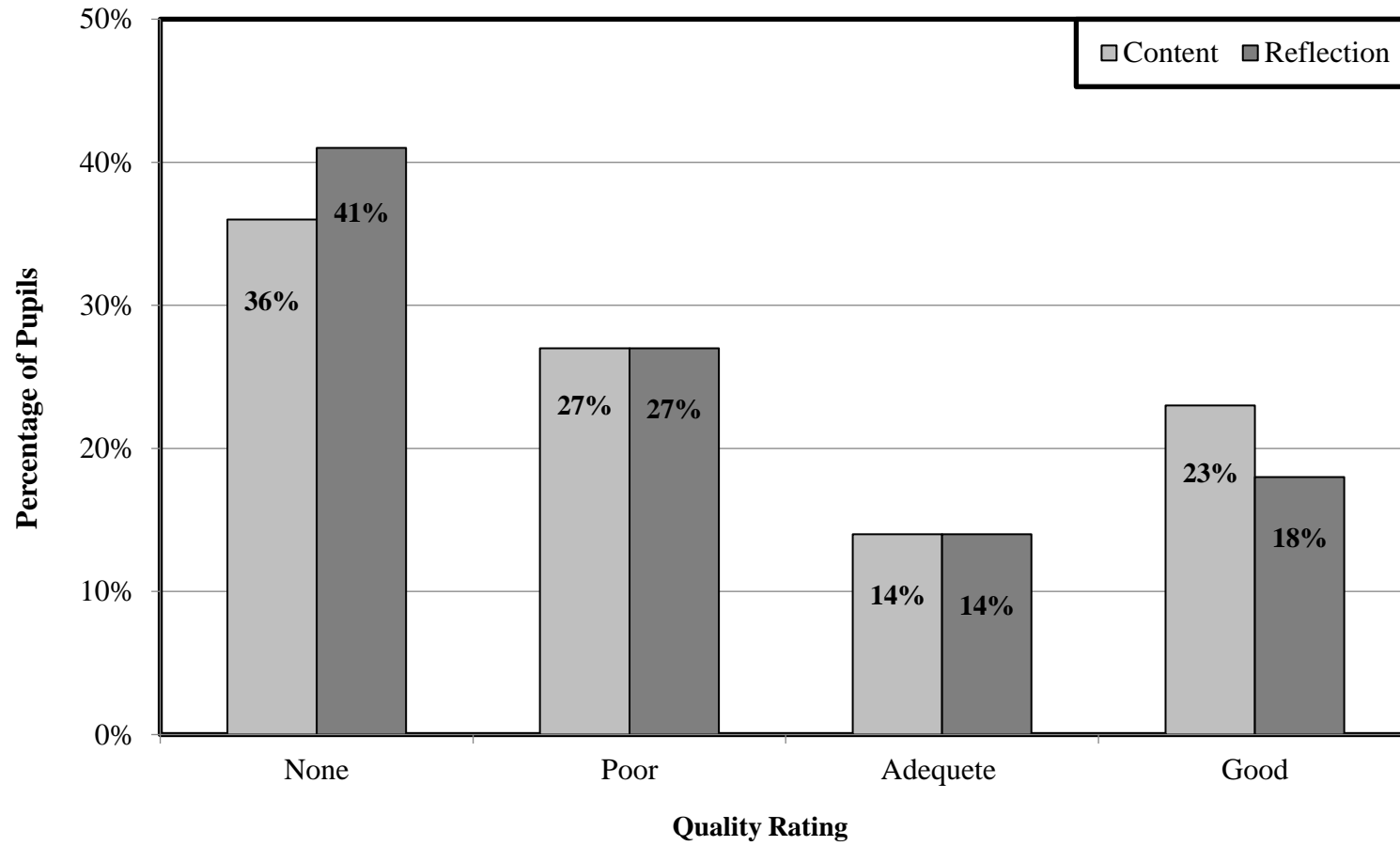


Figure 2

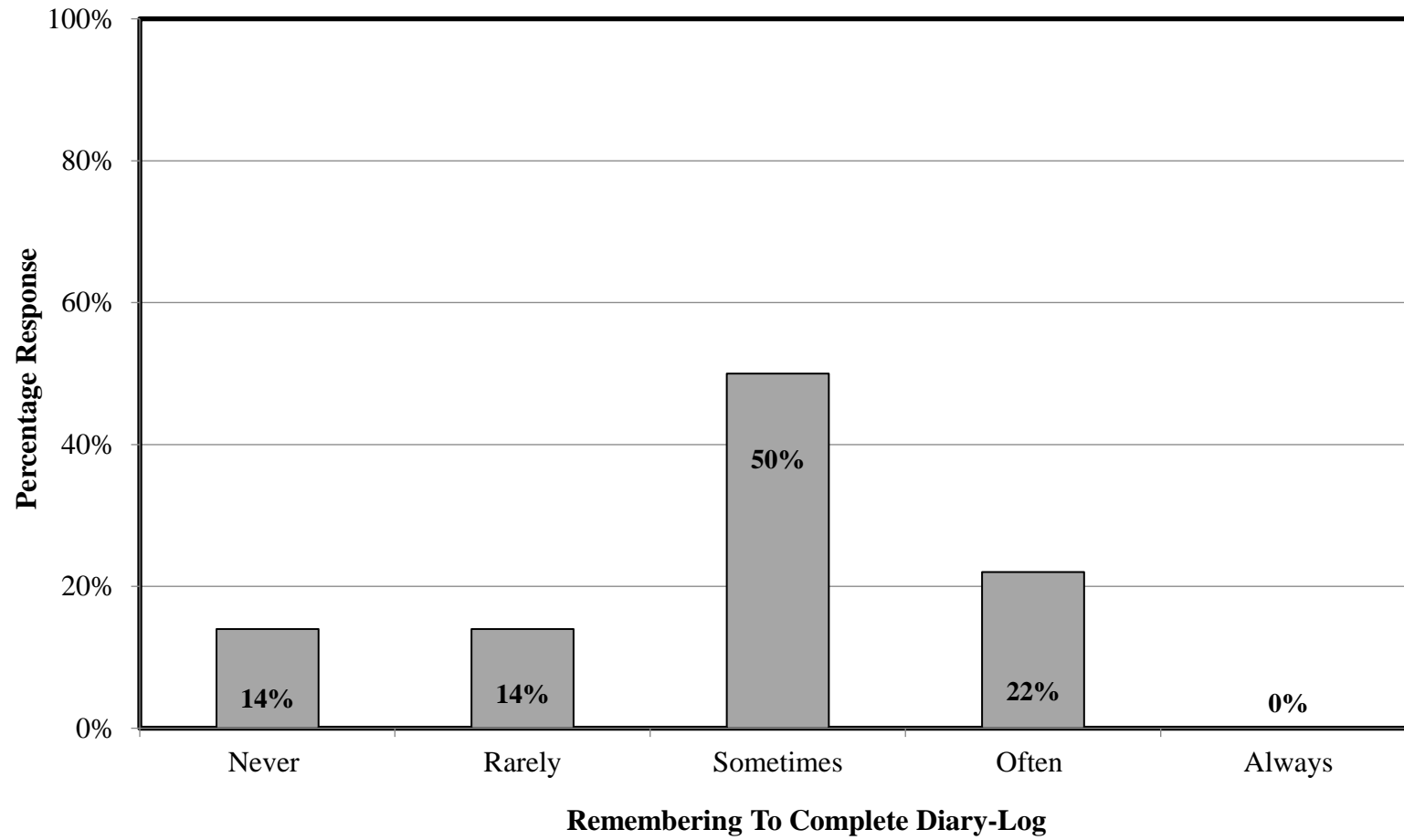
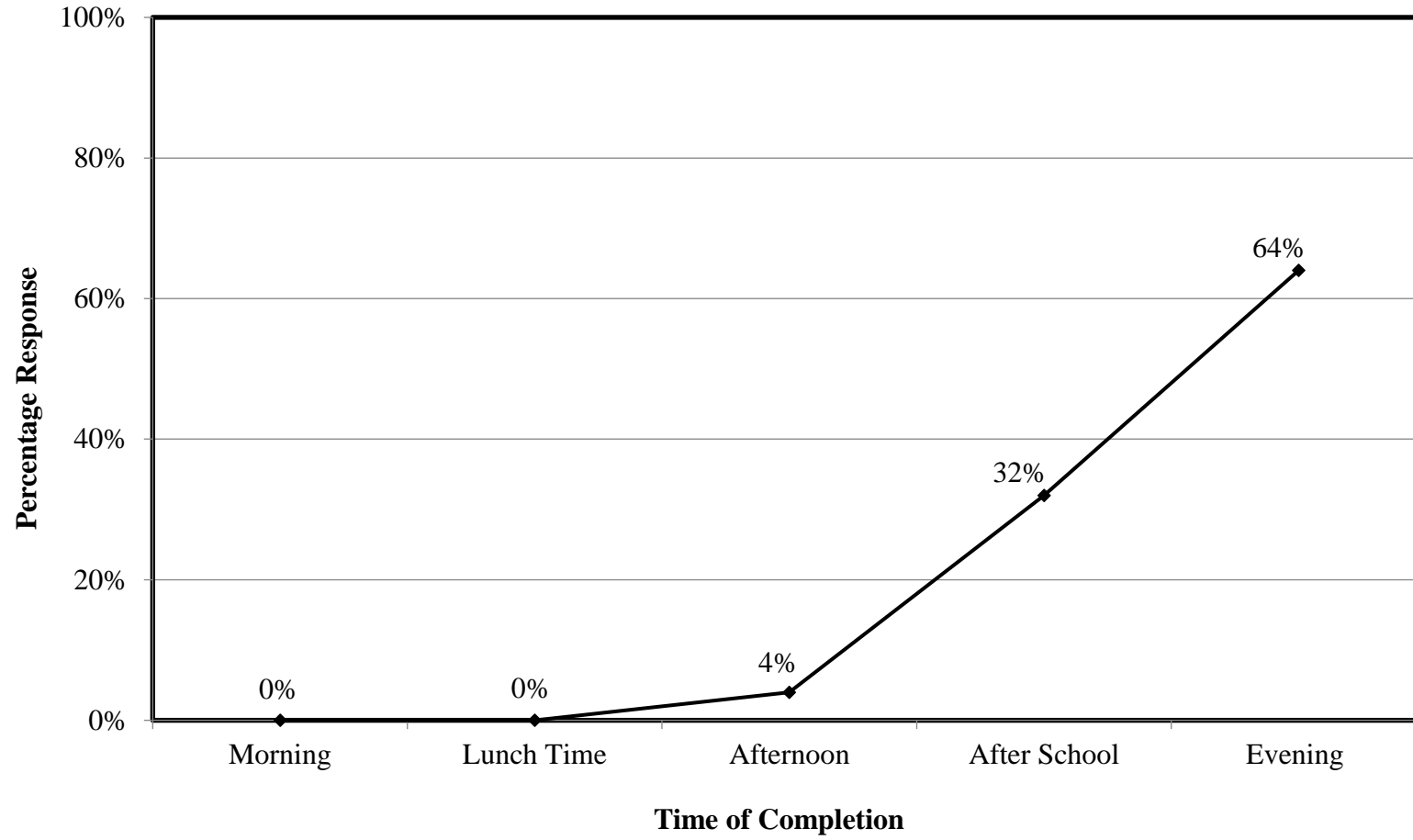


Figure 3



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Figure Subscripts

Figure 1. The percentage number of pupil diary-logs rated in written content and reflection quality (N=22).

Figure 2. The percentage number of pupils reporting the extent they remembered to complete the diary-log (N=22).

Figure 3. The time of day pupils reported they typically completed the diary-log (N=22).

Supplementary Information

Activity Diary

- ☆ The aim of this diary is to help you record and remember times that you felt you were good at something, and/or worked well with others.
- ☆ You can complete the diary at any time you wish.
- ☆ The questions **in orange are about things you felt you were good at**, and the boxes **in blue are about times you felt you worked well with others**.
 - The activity you felt you were good at can be *different* from the activity when you worked well with others.
 - Some days you may only complete one set of questions. For example, you may only be able think of something you were good at, but not a time when you worked well with others.
- ☆ The dairy is organised into 3 sections:
 - **Morning Lesson**: This can be something from a particular morning lesson, or a mixture of things from different morning lessons.
 - **Afternoon Lesson**: This can be something from a particular afternoon lesson, or a mixture of things from different afternoon lessons.
 - **Other Activities**: These can be things that you did outside of lessons at school (e.g. lunchtime, after school clubs, sport sessions), or activities you do in your own free time (e.g. spending time with friends).
- ☆ You do not have to complete every section. For example, some days you may write a lot for the morning lesson, but very little for the afternoon lesson.
- ☆ On days when you feel you may not have much to write at all, you can still try to think of something you did well or enjoyed on that day. These may be things that you don't normally think of (e.g. *being on time for a lesson* or *helping someone*).
 - Don't feel that you have to write something every day. There may be days when you have a lot more to write than other days, so don't worry if you leave some days blank.

Helpful Tips

1. For the questions - “What were you good at?” and “When did you work well with others?” - Describe the activity that you did.
 - Example: “I thought I did really well today in Maths today. We were learning about fractions”.
 - Example: “In my Science lesson today, I helped someone understand the task as they didn’t understand what we had to do”.

2. For the questions “How did you feel?” – Just write the feelings you felt.

Some examples may be:

Happy

Capable

Determined

Supportive

Inspired

Excited

Comfortable

Proud

Relaxed

Respectful

Energetic

Friendly

Pleased

Confident

Glad

Calm

3. For the questions “Why did you feel like this?” – Explain the specific things that made you feel that way.
 - Example: “I felt determined to answer all the questions we were set in the lesson, and was proud that I got more correct than I did last lesson”.
 - Example: “I felt supportive because I was able to help my friend, otherwise they might not have done the activity”.

(An example diary is presented on the next page to help you)

Activity Diary

		What were you good at ?	How did you feel?	Why did you feel like this?	When did you work well with others ?	How did you feel?	Why did you feel like this?
(Day of the Week)	Morning Lesson						
	Afternoon Lesson						
	Other Activities						